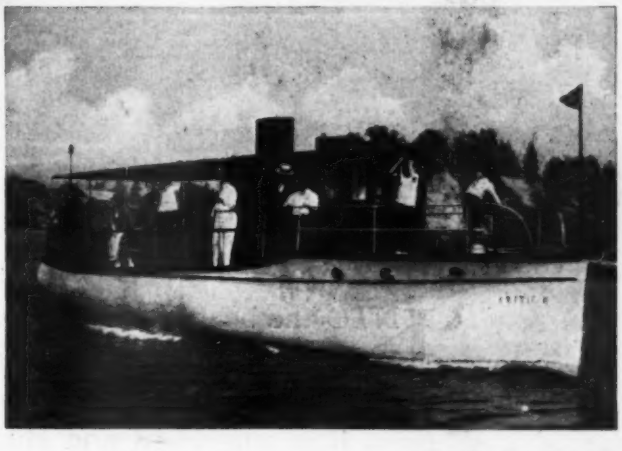
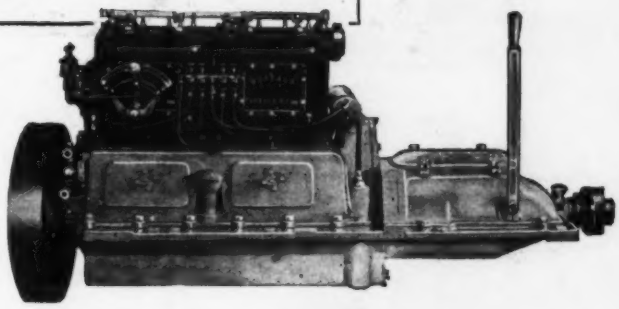
Buffalo



"The Engine of Constant Service"



IN your enthusiasm over your boat, don't become indifferent in the selection of a power plant - because the performance of your craft depends almost entirely on your engine.

Buy an engine you can trust —

THE BUFFALO MARINE ENGINE

Its rugged construction and simplicity are your guarantee of maximum dependability.

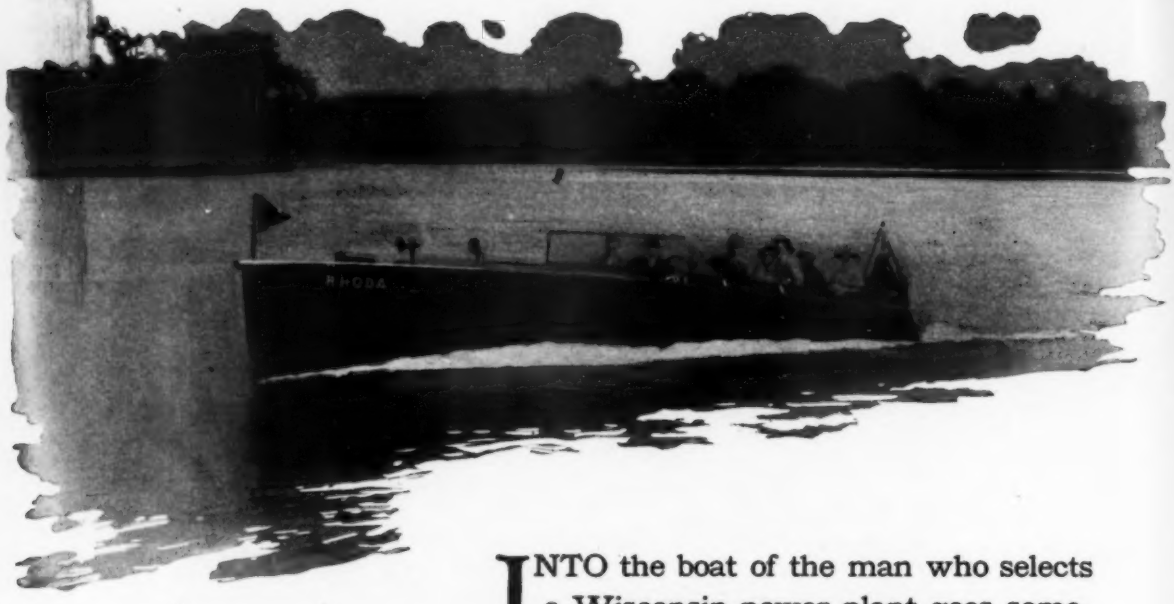
Buffalo marine engines are designed for powering cruisers, runabouts and workboats. They are built in all sizes, from 3 to 150 h.p.

May we send you "The Buffalo Book" and the new Buffalo Price List?

Buffalo Gasolene Motor Co

1274-1286 Niagra Street Buffalo, N.Y.

MOTOR BOATING, October, 1922. Volume XXX, No. 4. Published monthly at 119 West 40th Street, N. Y., U. S. A., by International Magazine Co. Yearly subscription price. United States, $3.00; Canada, $3.00; Foreign, $4.00. Entered as second class matter April 15, 1909, at the Post Office at New York N. Y., under the Act of March 3, 1879; entered on September 21, 1922, at the Post Office at Bethlehem, Pa. (Printed in U. S. A.)



INTO the boat of the man who selects a Wisconsin power plant goes something more than just a "new motor". New, it is, ungrimed and shining, but it has inherited the spirit and heart of a veteran. Thousands of its brothers, doing duty in the ports and waters of the world —veterans in years and in service—silently vouch for its worth; for its in-built ability to give unceasingly a full measure of trouble-free, consistent service. The performance of every new Wisconsin motor adds strength and significance to the phrase "The *Consistent* Motor."

WISCONSIN MOTOR MFG. CO.
MILWAUKEE WISCONSIN

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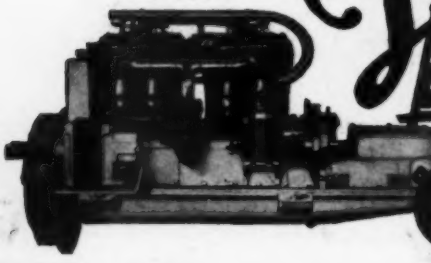


Wisconsin
Consistent
Consistent

Advertising Index will be found on page 122

They Have Survived Every Test

PARAGON REVERSE GEARS

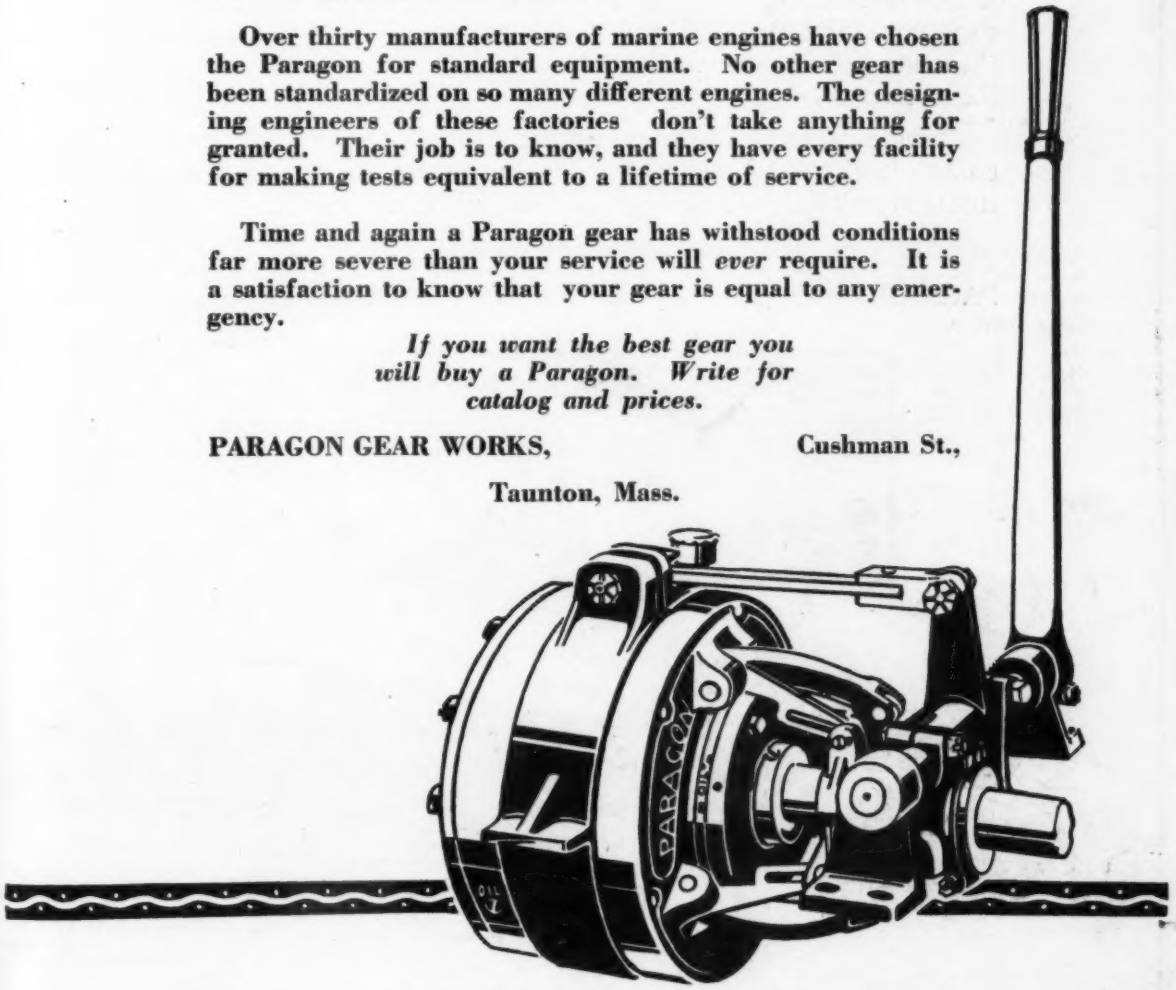
AS a boat owner your direct experience is probably confined to one or two makes of engines, to one or two reverse gears and to the particular conditions that prevail in your own boat. Compare with this the broad experience of all Paragon users and the great variety of tests Paragon gears have undergone and survived, often in direct competition with gears of other makes.

Over thirty manufacturers of marine engines have chosen the Paragon for standard equipment. No other gear has been standardized on so many different engines. The designing engineers of these factories don't take anything for granted. Their job is to know, and they have every facility for making tests equivalent to a lifetime of service.

Time and again a Paragon gear has withstood conditions far more severe than your service will *ever* require. It is a satisfaction to know that your gear is equal to any emergency.

If you want the best gear you will buy a Paragon. Write for catalog and prices.

PARAGON GEAR WORKS, Cushman St., Taunton, Mass.



Announcing

PACKARD MARINE MOTORS

ASK THE MAN WHO OWNS ONE

The first public appearance of Packard Marine Motors was a triumph in itself. Winning the famous Gold Cup in Packard Chriscraft at Detroit, giving a perfect performance with Packard Baby Gar in the Fisher-Allison race at Hamilton, Ont., and in the Wood-Fisher race at Detroit, certainly Packard traditions were maintained in the characteristic Packard way.

Single six and twin six marine motors ranging from 40 to 400 h.p. will be supplied. These motors are now in production and definite delivery dates can be arranged.

Full details sent on request.

PACKARD MOTOR CAR COMPANY, DETROIT, U.S.A.

PACKARD CHRISCRAFT Winner of the Gold Cup Trophy Race for 1922. Powered with a 6 cylinder Packard Marine Motor. Speed, 43 miles per hour. A 26 ft. displacement runabout built for Col. J.G. Vincent, by the Chris Smith & Sons Boat Co., of Algonac, Michigan.

Advertising Index will be found on page 122

MOTOR BOATING

OCTOBER
1922
VOL. XXX
No. 4

Mrs. Albert Hickman, Mrs. John Aspegren, John Aspegren, Albert Hickman, and Mrs. Daniel Bacon—Mother of Mrs. Aspegren—Taking a Spin in the Aspegren Sea Sled at a Speed of Forty Miles an Hour, off Newport.

THE racing season in the East was brought to a close at Buffalo, on September 16th. The regatta of the Buffalo Launch Club was a fitting climax to the most successful racing season the sport has ever known. Competition has been keener this year and there have been less breakdowns and withdrawals—and as a result of the standardized classes based on piston displacement and length of the boats, which were provided by the American Power Boat Association last fall, freaks have been eliminated and the sensible type of boat and power plant has resulted.

As usual, Buffalo did herself proud in everything connected with the races in that city. The arrangements were carried through without a hitch and there were no postponements or last-minute changes in the arrangements. As a result, the largest crowd of spectators that has ever witnessed motor boating events on the Niagara River, thoroughly enjoyed every minute of the three days' racing.

In the class for runabouts having a piston displacement of 2200 cubic inches or less, Baby Gar 11, owned by Commodore Gar Wood of Detroit, took first honors. However, Wood Fish, Edsel Ford's new Hacker-built 32-footer, outran Baby Gar 11 on the third day and established new world's records for runabouts both for the five-mile lap, and the thirty-mile race. Wood Fish's best five-mile lap, was at the rate of 53.6 miles per hour and her best thirty-mile race was at the rate of 53.25 miles per hour—both of them remarkable performances. Wood Fish is, in every sense, a gentleman's runabout; runs on an even keel, and is probably capable of even better speeds than she was required to show at Buffalo. Baby Gar 11 likewise ran well and had no trouble in winning the first two heats.

In the class for runabouts having a piston displacement of 1100 cubic inches or less, Baby Gar Jr. took first place, defeating Nick Nack and Sayanora, in three straight heats. Baby Gar Jr.'s best heat was at the rate of 41.1 miles per hour and her best lap was at the rate of 42.3 miles per hour.

The class for runabouts of 625 cubic inches piston displacement brought forth some keen racing. Arab VI, Bear Cat Special, and June, were powered with Sterling Sea-Gull motors. Belle Isle Bear Cat had a 4 cylinder Hall Scott marine motor and Miss Mary a 4 cylinder Peerless. Arab VI took first place and Belle Isle Bear Cat and June were tied on points for second, but the former had the better total elapsed time for the three races and was therefore awarded second place.

The 2200 cubic inch hydroplane class brought out three starters: Baby Holo, owned by Horace E. Dodge of Detroit; Miss Toronto, and Baby Sure Cure. Baby Sure Cure took the first heat but was beaten in the last two by Baby Holo. Baby Holo set up a new record for single engine hydroplanes averaging 62½ miles an hour for her best thirty-mile heat and 64.1 miles per hour for her best five-mile lap.

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MoToR BoatinG is published monthly by the International Magazine Company, William Randolph Hearst, President; C. H. Hathaway, vice-president; Ray Long, vice-president; Joseph A. Moore, treasurer; W. G. Langdon, secretary; 119 West 40th Sreet, New York, N. Y., U S. A. Single Copies, 25 cents. Yearly subscriptions; in United States and Canada, $3.00. In foreign countries, $4.00. When you receive notice that your subscription has expired it is best to renew it at once, using the blank form enclosed. When requesting a change of mailing address, give the old as well as the new one. Allow four weeks for the first copy to reach the new address. Copyright, 1922, International Magazine Company

Who Can Beat Chris Smith?

His Boat Wins The Eighth Consecutive Gold Cup Victory

If any furthur demonstration of Chris Smith's supremacy as a builder of speed craft were needed, it was furnished by this year's Gold Cup races.

When the Packard Chriscraft, driven and owned by Colonel J. G. Vincent, of Detroit, and powered with a Packard Marine Motor, flashed across the line, victor in the Gold Cup races, at Detroit, on September 4th, it marked the eighth consecutive Gold Cup winning by Chris Smith built boats.

For eight years Chris Smith kept competition far in the background with these famous boats—the Baby Speed Demon, the Miss Minneapolis, the Miss Detroit I, II, III, and the Miss America.

This year the victory was won under the new rulings with a displacement boat in the restricted piston displacement class.

This clearly demonstrates Chris Smith's versatility and his ability to build winners in any type of boat.

Chris Smith, working in one of the finest equipped boat-building plants in the country, is open for contracts to build power boats of any type.

His standard 26-foot runabout of the Chriscraft type sells for $3000. and up, and is guaranteed for 35 miles an hour.

Write for information.

CHRIS SMITH & SONS BOAT CO.,
Algonac, Mich.

CHRIS SMITH CRAFT

Advertising Index will be found on page 122

Shadow F, a 72 ft. x 14 ft. express cruiser that makes 35 miles an hour. The most highly developed boat of its type ever built.

What Is an Ultra-Express Cruiser?

You'll Find the Answer in the new Shadow F Just Completed by Purdy for Carl G. Fisher.

by Walter F. Bailey

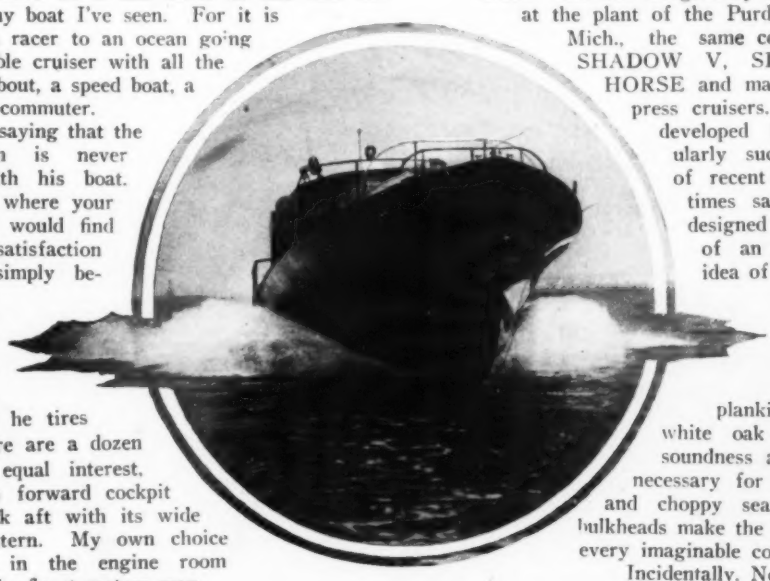
I'VE always held a secret contempt for writers who show their lack of vocabulary by coining and compounding new words on the spur of the moment. But here now I've done it myself just because there doesn't seem to be any word in the language that quite fits the new Shadow F.

Fine motor craft are getting to be fairly common these days, perfect in design, arrangement and equipment, exquisite in workmanship, finish and furnishings. And the latest Shadow is more kinds of a fine craft at one and the same time than any boat I've seen. For it is everything from a racer to an ocean going yacht; a comfortable cruiser with all the features of a runabout, a speed boat, a day cruiser and a commuter.

It is a familiar saying that the typical yachtsman is never quite satisfied with his boat. It is hard to see where your typical yachtsman would find time for any dissatisfaction on Shadow F, simply because it affords such a variety of boating experience, such adaptability for different purposes. If he tires of the bridge there are a dozen other places of equal interest, from the glorious forward cockpit to the roomy deck aft with its wide seat across the stern. My own choice would be down in the engine room caressing two of the finest motors man ever made.

Mr. Fisher is somewhat of a connoisseur of express cruisers, having owned a half dozen or more boats of this type, all of them exceptional boats and each one a notable advance over its predecessor. The art of boat building probably existed before history was written and will go on to the end of time. Yachtsmen will go on demanding innovations, changes and refinements—designers will continue to create them—and still it is difficult to conceive of a more complete or more luxurious craft than this express cruiser of 1922.

Shadow F is 72 ft. in length, with 14 ft. beam and 3 ft. draft. She was designed by E. D. Purdy and built at the plant of the Purdy Boat Co., Trenton, Mich., the same company which built SHADOW V, SHADOW VI, SEA HORSE and many other famous express cruisers. The hull design is developed from several particularly successful Purdy boats of recent years. It is sometimes said that every newly designed hull is more or less of an experiment, but the idea of developing a new design from past successes eliminates the experimental feature entirely. Double planking of mahogany over white oak frames insures the soundness and durability that is necessary for high speed in rough and choppy seas. Eight watertight bulkheads make the boat unsinkable under every imaginable condition.



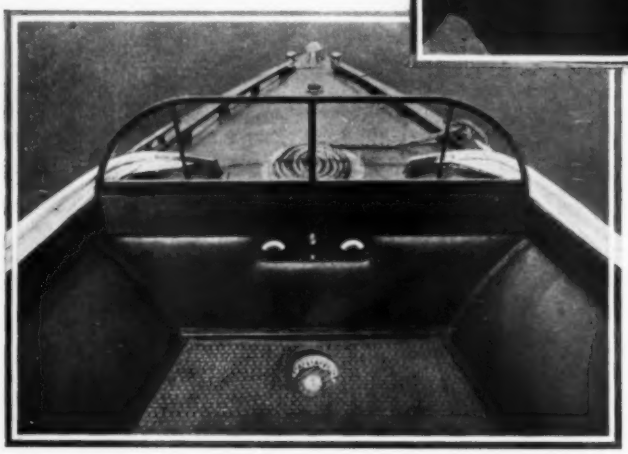
The pronounced flare is characteristic of all Purdy-designed boats. Not only does it provide more deck accommodations but it adds greatly to the seaworthiness of the hull and makes the boat absolutely dry.

Incidentally, Ned Purdy has his own method of building boat frames which accounts for the exceptionally pretty flare forward and sharp tumble home aft. He slots the frame longitudinally, bends it to shape and then bolts the bend in place so it holds its curve

indefinitely without the internal strains caused by the wood trying to resume its natural shape. The wonderful flare not only throws the flying spray far out at the sides, entirely clear of the boat, but at speed it creates an upward and outward air current, that keeps the forward cockpit free from side currents and backdraft.

At first thought seventy-two feet seems large for an express cruiser. The term is loosely applied to anything from 30 ft. up that will do 12 miles or over. Shadow F is an express cruiser in the best sense of the word because it has real cruising accomodations with express speed, 35 miles an hour with the engines turning 1500 r. p. m. A single foot taken out of her anywhere from stem to stern would sacrifice something of the beauty, comfort and luxury that is built into this boat. Nothing is missing and nothing is cramped yet on the other hand no space is wasted as every inch has been skillfully utilized. Seldom will you find such roominess for freedom of movement and such complete accommodations as are compressed within this seventy-two feet.

This deep upholstered seat reminds you more of your favorite chair at the club than it does of the cockpit of a motor boat. Located far from the engines and the bridge controls the sensation of riding here is what flying ought to be but isn't— the sensation of great speed without the noise, vibration or wind that makes flying so tiresome. Under the seat is a drawer for cracked ice, and next to this a compartment for Thermos bottles and "other things."



The forward cockpit is easily the outstanding feature of Shadow F. A compass in the floor lends interest while two tachometers show the speed in miles per hour and in engine revolutions per minute. Between the instruments is an electric cigar lighter. The sides and front panel are covered with Spanish leather to match the seat.. Notice the windshield, and the top folded down at each side.

The forward cockpit is almost a whole boat in itself, with more seating capacity than the average speed runabout. Six persons find ample room in the deeply cushioned transverse seat. This is covered with hand buffed Spanish leather, as are the sides of the cockpit. A speedometer, tachometer and cigar lighter are in the instrument board below the wind-

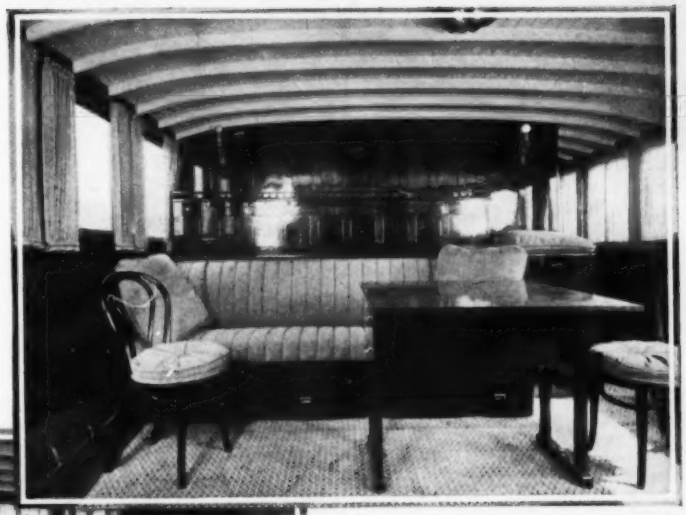
Riding up on the bridge is as comfortable as it is exciting. The common engine room noises and heat so often present on the bridge of express cruisers have been entirely eliminated in Shadow F.

All controls for boat and motors are brought up to this position on the bridge. The captain can start the motors from here and operate the boat for hours without going near the engine room. A chart case is shown at the left and in front of the wheel inclosed in glass are the ammeters, motometers, tachometers, clock, etc.

shield while a compass is centered in the carpeted floor. Attention to detail is shown by the fact that the anchor stowed for'd is specially cast of bronze to avoid deflection of this compass. From either or both sides of the cockpit a folding melon top can be raised to any degree to give partial or complete weather protection.

Every cushion, pillow and mattress on this boat is a life preserver, stuffed with kapoc. Two long cushions lashed to the guard rail on each side of the deckhouse roof add to the seating capacity for entertaining large parties on day trips.

The bridge amidships is high enough to give a commanding view of the sea in all directions. There is room for several chairs in addition to the wide upholstered seat. Every control for operating the motors as well as the boat itself is brought up to the helmsman's position. Spark, throttle, and reverse gear levers, ignition switches and starter pedals are at each side of the wheel and an illuminated instrument case contains a radium dial clock together with Motometers, tachometers, ammeters, etc. for each motor.



The larger of the two saloons. The built in seat is really a large Pullman type folding berth which makes up into two comfortable beds at night.

The main saloon looking forward. On each side are doors leading to the deck. At the right is the passage leading forward to the owner's stateroom.

The interior of such a boat needs little description other than the arrangement, for anyone familiar with modern yachts knows what to expect in the way of superb workmanship, finish and furnishings. The trim, panellinig and cabinet work are natural American wa nut, with white enamelled ceilings, deep carpeted floors, silk curtained windows and solid brass hardware. As one little example of the detail refinements let me mention that one need never worry about food or refreshment as there are two iceboxes in the forward saloons as well as the large one in the galley.

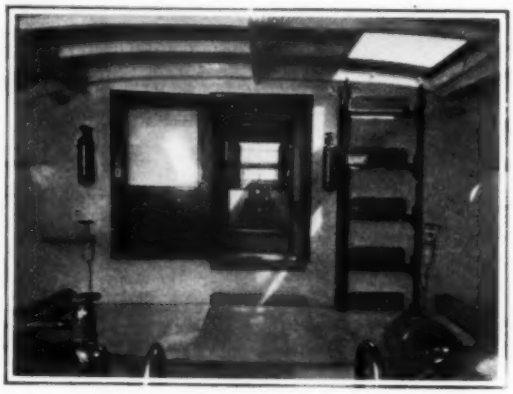
A berth in the owner's stateroom.

The owner's stateroom forward has two wide berths and connects with a private toilet. Next is the large saloon with double Pullman berths, table and chairs. Back of this is another saloon or lounge and smoking room, which also has Pullman berths for two.

The second saloon or smoking room also contains large Pullman berths for two.

The engine room under the bridge contains the finest motor installation that money can buy. Two 12-cylinder Allison gasoline motors of 425 H. P. each drive the boat at a cruising speed of 35 miles an hour, turning 1500 R. P. M. The story of these motors would make a book in itself for they represent the last word in completeness and refinement of design, workmanship and equipment. Gasoline tank capacity of 750 gallons gives a full speed cruising radius of 450 miles between ports.

Following aft comes the galley with its large refrigerator and 4-burner alcohol range, and then the crew's quarters with accommodations for four. It is a remarkable feature of Shadow F that a paid crew of two or three is sufficient for every purpose. The captain-engineer handles the navigation, motor operation and motor maintenance while the steward and extra hand will find it hard to stay busy, no matter how many guests are aboard.



Looking aft from the engine room through the galley and crew's quarters to the after deck. The engine room is directly under the bridge deck.

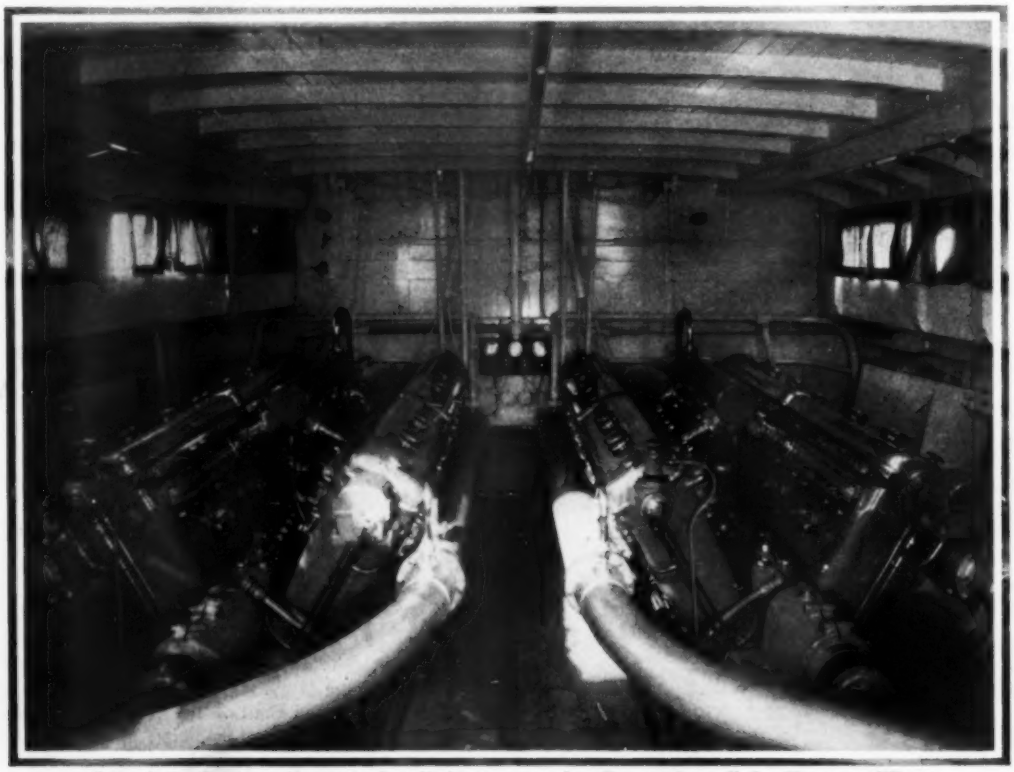
Already Mr. Fisher plans to sell Shadow F in order to start construction on another boat he has in mind. Building boats seems to be his hobby, along with several others, for with three famous express cruisers in service he now has a number of new ideas seeking expression in the form of another new boat.

On her maiden trip from Detroit to New York early last month Shadow F came up to expectations in every particular. The lucky man who buys this boat will save a great deal of trouble and a great deal of delay; he will get the benefit of Mr. Fisher's long experience in finding out all that an express cruiser can be. Perhaps one boat in a thousand comes as near to being all that she is intended to be. And Shadow F is ready for immediate delivery in New York waters.

Even with all of Carl Fisher's and Ned Purdy's combined ingenuity in finding new reasons and new ideas for building another boat, I think they have closely approached their ultimate design in Shadow F. It is noticeable that this boat follows in a general way the type V and Shadow VI, but on a larger and more elaborate scale. The next Fisher boat will probably be a slight variation of this design, differing only in minor details and interior arrangement.

Of all the men who buy or build fine boats for their own use there isn't a better or more consistent customer than Mr. Fisher for he always wants the best of everything and he always has a new boat under construction. It is only natural that the men who now work on Fisher boats year after year, and those who supply equipment and accessories, should put their best workmanship and skill into what they do for such a valued customer. Their consistent efforts to please Mr. Fisher are shown by many little details throughout the Shadow F.

Inquiries addressed to Carl G. Fisher, Heckscher Building, Fifth Avenue at 57th Street, New York, will bring information as to price, demonstration and delivery.



One of the finest marine motor installations ever made. Two twelve cylinder Vee-type Allison motors of 425 H. P. each. Although designed to operate continuously at 1500 R. P. M. these motors have the sturdiness of slow speed heavy duty motors.

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MICHIGAN

Fittings, Propellers, Accessories

YOU'LL soon be fitting out the old boat, painting her inside and out, overhauling your engine and putting everything shipshape for another season. Of course you'll need some new equipment and fittings—you can find just what you want in the Michigan catalog, at the prices you want to pay. Prompt deliveries and quality products.

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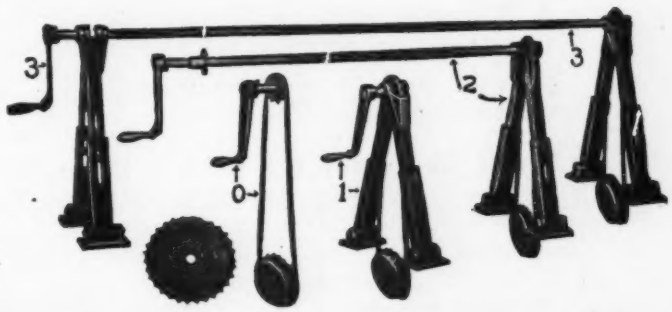
Michigan Propellers

The famous Michigan Propellers have been on the market for many years and are used in large numbers by leading engine manufacturers and boat builders. Our stock includes many popular patterns in two and three blade wheels with special designs for cruisers, speed boats, hydroplanes, racing, towing, weedless, etc.

Michigan Reversible Propellers take the place of a reverse gear and save room, save money and save weight. Furnished with standard blades for ordinary purposes, and with special racing blades for speed boats.

You will get maximum efficiency from your boat and engine if you select a Michigan Propeller. Give us the details of your boat and engine so our engineers can recommend the proper size and pitch.



The Michigan Adjustable Rear Starter is not only a great convenience in starting the engine, but your wife or daughter can crank the engine with a Michigan because it avoids bending over and the two-to-one or three-to-one gear reduction reduces the strength required to turn the engine over. Adjustable for any width or height of engine bed and bulkhead. Easily installed. Four sizes.

Flange Couplings, Clamp Couplings, Plain Couplings, Intermediate Bearings, Ball Thrusts, Stern Bearings, Stuffing Boxes, Self Aligning Struts and Shaft Hangers, Propeller Shafts, Universal Joints, Steering Wheels, Tiller Rope, Anchors, Ventilators, Bells, Bilge Pumps, Silencers, Underwater Exhausts, Carburetors, etc., etc.

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30-foot Runabout—double planked bottom, batten seam sides, mahogany planking, accommodations for a party of eight, powered with a 300-horsepower engine for a speed in excess of 40 miles an hour, price $5000.00. Send for Bulletin No. 233.

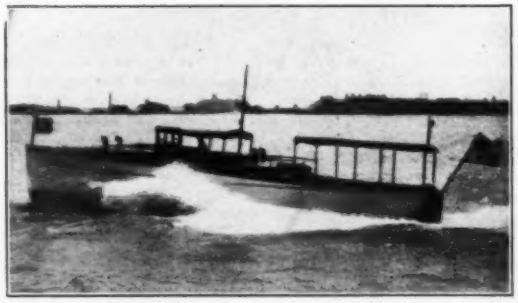
Three Florida Boats

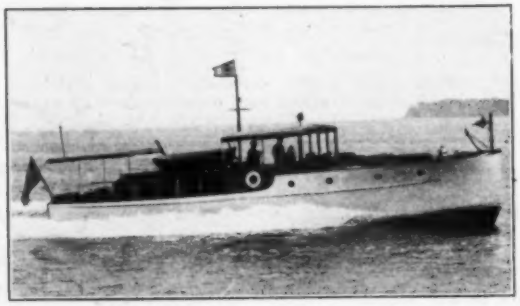
GREAT LAKES Express Cruisers and Runabouts dominate the Florida market for the reason that they combine a good turn of speed with staunch construction, unusual comfort and luxury. In the event you contemplate the purchase of a boat for use in Southern waters this Winter you will want a Great Lakes Craft.

GREAT LAKES BOAT BUILDING CORPORATION
MILWAUKEE, WISCONSIN

Largest Builders of Express Cruisers in America

42-foot Express Cruiser—Accommodations for four for extended cruising and for a much larger party for day sailing; the most successful type of express cruiser ever developed for fishing in Florida waters. A speed of 22-24 miles an hour is available. Send for Bulletin No. 232.





54-foot Express Cruiser—This reflects the utmost obtainable in a motor yacht; a cruiser without a competitor; accommodations for a party of eight and a crew of two; coordinating a speed of 25 miles an hour with seaworthiness, sturdy construction and the maximum comfort and luxury that can be incorporated in a boat; immediate deliveries can be had. Send for Bulletin No. 231.

Advertising Index will be found on page 122

One of the starts of the Gold Cup Race at Detroit. Nine of the thirteen starters can be seen

Gold Cup Race, A Great Success

Thirteen Wholesome Runabouts Demonstrate Reliability and Service as Compared With the Hydroplane—Gar Wood Loses Trophy but Detroit Retains it.

By Charles F. Chapman

THE King is dead! Long live the King! Gar Wood, the invincible, has been beaten .... beaten, not by a hair's breadth, but by a margin so wide that it hardly seems possible that he was one-time King. The best he could get was a poor seventh. But Gar Wood is happy, and was the first to congratulate the winner and show himself to be as good a sport when losing as in his usual role. Aside from this, Detroit came about as near losing the Gold Cup as it is safe to come,—nearer than on any occasion during the last six years in which she has held the trophy.

This year's races for the classic Gold Cup, representing the American Power Boat Association Championship of North America, were a grand and

The winning crew—Bernard Smith, Mechanician and Colonel J. G. Vincent, owner and driver

The crew of Aral, the runner up,—Smith and Commodore Ralph Sidway of Buffalo

Gold Fish, the entry of Edsel Ford, which broke down in the first heat

The boat that almost but not quite, won—Arab IV, representing the Buffalo Launch Club and powered with a Sterling Sea Gull motor

It will be recalled that the race for the Gold Cup, up to this year has been for hydroplanes, that is: an unlimited class—the only restriction being that the boats over all length should not exceed 40 feet. For the last several years, in fact ever since the race was held on Manhassett Bay in 1914, the entry list has greatly diminished year by year, so that in 1921, there were only three entries and no competition. Gar Wood's Miss Detroits and Miss Americas have had everything to themselves since 1917, and with the necessary expense involved to develop and improve a fast enough craft to beat him, no one was to be found who cared to make this sacrifice. Therefore, at the last Annual Meeting of the American Power Boat Association, the Deed of Gift governing the Gold Cup was so changed that hydroplanes and other unlimited craft would be barred and the race this year open to displacement boats of not less than 25 feet in length and powered with motors of not over 625 cubic inches piston displacement. The results of the first competition under these new terms firmly proves

Zephyr, owned by Paul Strasburg of Detroit ran well until a broken crank shaft ended her career

glorious success. Compared with the races of the past they outshone anything ever seen anywhere. The greatest number of starters went across the line at the gun that have ever competed in this great national event, which has been held annually for twenty years. Furthermore, the entry list contained the greatest number of speed craft which have ever appeared for a single event anywhere in this country or abroad.

Baby Gar II, owned and driven by Gar Wood, winner of the Wood-Fisher Race. She set up a new record of 48.95 miles per hour for 50 miles

Baby Gar Jr. Gar Wood's entry in the Gold Cup Race, leading his brother Win Wood's Redbird. The latter finally won out

that the change was a wise one. It is evident that there are a large number of racing enthusiasts in this country who are desirous of owning boats which fit the new requirements while only one person could be found interested enough in hydroplanes to go through the racing campaign with the latter type of boat.

The Gold Cup races this year drew thirteen entries. Of these thirteen entries, all of them started the first heat. The boats were all real runabouts, with racing considerations only a secondary thought. In no way did the boats or the power plants resemble the old-day racing machine. The owner himself in every instance drove his own craft. It was a great race from start to finish, with no rough work or unfair driving evident at any time. There was no protest of any nature filed and as far as could be learned by the Race Committee, there was not a single case of dissatisfaction on the part of the owners with the racing rules or racing details.

Bear Cat special entered by Richard Locke of Detroit

Blue Bird of Minneapolis entered and driven by P. Gray

When the piston displacement of 625 cubic inches for the motors was suggested about a year ago, it was thought that the racing men would select motors on the market for their craft which would fit the requirements and while a number of them did choose stock motors, yet in a number of instances, the motors were especially built or especially equipped and showed to what extent the owners had gone to prepare themselves for the race. Stock Sterlings, Hall-Scotts, and Peerlesses were used and performed well. In addition to these, one boat was equipped with a 12-cylinder Packard motor which had six of its cylinders removed in order to meet the piston displacement limitation. Another of the boats was fitted with a Liberty motor, having six cylinders removed and the other six bushed down to reduce the piston displacement to the limit. Two of the other boats were fitted with 8-cylinder Liberties with special cylinders of a size which permitted them to get within the requirements.

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Edsel Ford's Woodfish which set up a new lap record of 53 miles an hour in the last heat of the Wood-Fisher Race

Canadians Are Hosts

The Visitors Are Royally Entertained and One of the Finest Handled and One of

At the left, Messrs. Hoyt and Ericson aboard Nick Nack. If the protests against Baby Gar III and Packard Baby Gar are sustained, Nick Nack will win the trophy

At the left, H. R. Duckwall of Indianapolis, one of the officials at the Canadian races. Mr. Duckwall, it will be remembered, was the owner of the famous family of Hoosiers which made a name in racing circles a few years ago

At the right, a new member is welcomed into the Wood family. Left to right: Mrs. Philip Wood, Philip Wood, and Mrs. Gar Wood

Below, the crew of Miss St. Lawrence. This boat, up to within a few miles of the finish on the third day, had a good fighting chance for first place, but was put out of the race by an unfortunate accident in the last miles

Above, D. P. Brown, of the Royal Hamilton Yacht Club, who acted as Chairman of the Technical Committee in connection with the recent races for the Fisher-Allison Trophy. Mr. Brown performed his duties in such an able manner that race committees from all parts of the country could well apply to him for advice and suggestions

to American Yachtsmen

Entertained and Witness the the Best Regattas Ever Held.

At the right, Commodores Vila and Pook, the men behind the guns at the Hamilton races and the two officials who —with D. P. Brown— were in charge of all the details and to whom full credit should go for one of the most successful race meets in the history of the sport

At the left, George Leary, Jr., and Gar Wood. The former announces that he will be back in the sport next year and promises to have a boat which will make even Commodore Wood step lively

At the left, Commodores Greening and Criqui figuring out how it all happened

Above, Mrs. Commodore Greening, hostess to the entire yachting delegation which visited Hamilton for the Fisher-Allison races late in August

Below, Colonel Thomas A. Duff, the most popular Colonel at the race meet, with Mrs. Ditchburn, Mrs. Wood and Mrs. Utz

A Bear Cat turning in her own length while going at a speed of 35 miles an hour. These boats are all powered with four cylinder 125 horse-power Hall-Scott Marine motors. They have the luxurious appointments of the high class motor car and are safe, dry and seaworthy in all kinds of weather and sea

Hall-Scott–Belle Isle Bear Cats Win at 35 Miles an Hour

Mrs E. M. Gregory, the driver of Demon Bear Cat which finished second to Mrs. Stanley Morgan in the Bear Cat race for boats handled exclusively by women

Start of six Bear Cats in one of the feature races at the Detroit Regatta. This event was won by Bearcat Past Due owned by F. Haines

We Discover the Pearl Islands

And look in Vain for the Ideal Anchorage — But We Find Beauty and Novelty in the Panama Bay, and Feel Like Sure-Enough Explorers

By Alfred F. Loomis

A snug anchorage for Hippocampus was finally found in Comfort Harbor

HAD this story been written during the first four days of our explorations in the enchanting Pearl Islands, it would have been entitled "Nowhere to Anchor; or, Homeless in the Islands of Panama Bay." But now we have come to a snug harbor, the anchor is down in four fathoms on a sandy bottom, and the wind which has chivvied us about for the better part of a week wreaks its venom in vain on the rocky bluff of a high, protecting shore. We have come to Comfort Harbor.

Following the fruitless ascent of the Chagres River in pursuit of tarpon (duly chronicled in the preceding installment) Mrs. Loomis came aboard and we proceeded southward through the Panama Canal. While Jo, glad to be under way in the little Hippocampus, displayed an unruffled exterior, I entered upon this journey over the continental divide with some misgivings, having in mind sundry damages done to the yawl when she went amuck in Gatun Locks last year.

Arriving at the lower chamber of the thousand-foot locks, we took two negro deck hands aboard, armed them with boathook and fenders, cleared the starboard deck of all gear and rigging from the main shrouds aft, and stood by for trouble. In the first level none came, and we hugged the western wall with the becoming tenacity of the proverbial leach.

But in the second! Well, the second chamber of the Gatun Locks has always been the Nemesis of small craft from destroyers down, and we took our share of excitement. No actual damage resulted, but as the water surged up from the sixteen-foot culverts beneath us, we bounded from the wall like a tennis ball, and lay poised in a four-knot current ready to bound back like a bundle of kindling wood. But there the motor got in its fine work, and, running at half speed, stemmed the current, gave us steerage way, and held us off from the destructive wall. Three or four times during the ensuing fifteen minutes I was able to head gingerly in, so that the men who were handling our lines ashore might take in the slack which the rising water gave them. Finally the current slacked off and was replaced by a lesser one from astern. At this, the propeller was reversed and we veered carefully in to the wall, where our colored deck hands brought their fenders into play.

The performance in the uppermost

Anchorage of the Balboa Yacht Club With Ancon Hill in the background. There are thirty or forty motor boats at Balboa, all designed for utility more than appearance

level was a repetition of this, and as the motor ran well throughout we came through unharmed. But to big game hunters and others who have dulled the sharp edges of their nerves I would recommend the first charge of Hippocampus as the bubbling, boiling surge of water carries her away from the wall. The knowledge that if the motor stops she will charge back and may, like many a native cayuca before her, split open from stem to stern, is the finest tonic for the nervous system.

My own nerves need no tonic, and I was glad when we reached the lake level and had put our troubles behind us. Jo had remained unperturbed throughout, and if I had needed any reassurance on the point I now knew that she would maintain the traditions of seamanship and nonchalance established by the two Joe's in last year's cruise.

The trip through the canal was made without incident, sails furled, awning spread, and engine clocking off her steady five and a half knots. Then in Balboa we lay off the yacht club in the fleet of American-owned, native-built motor boats, and made ourselves and Hippocampus better acquainted.

A tumbledown beach shrine at San Miguel in the Pearl Islands.

A week later we hoisted anchor at high slack water, and with Jo at the tiller, me at the work of coiling halliards, and the rest of civilization behind us, stood away for the Pearl Islands. These, as everyone should know, and no one seems to, are the largest group in Panama Bay, numbering sixteen principal islands and about a thousand rocks and ledges. Famous for centuries for their pearl fisheries, their lustrous treasure contributed no small part to the wealth of the Spanish Empire. Now, however, that the pearling industry is at a low ebb, their chief claims to distinction appear to be that every American in the Canal Zone wants mightily to visit them, and about one in a hundred has ever seen them. Over and above all, they are beautiful with a rich, exotic beauty, and their waters literally teem with fish.

For four hours we sailed leisurely toward these islands of enchantment, and then rolled idly as the dying breeze evoked the last flickering whitecap ahead of us. The main boom swung inboard with a purposeful air, and the time came to douse the sail and start the motor. Now a chop developed from nowhere in particular and as the jib and jigger booms commenced slatting I complained to Jo that this was exactly the kind of sailing that I didn't like.

"Why," she asked, "you don't call this rough?"

"Not rough," I replied, "but fiendish. With this calm and chop we are rolling as uncomfortably as we would in a Caribbean storm. Give me wind when we are sailing and a smooth sea when we are motoring. And take notice that the conditions are usually reversed."

But presently a slant came from our port beam and we hoisted sail and bore away again. By 4:30 we had come within easy distance of Pacheca, which is the northernmost of the Pearl Islands, and I was scanning the waters ahead for the tide rip which is said to make the vicinity an unpleasant place. Nothing alarming appeared, but the wind dropped away again, and again we lowered the mainsail to keep the boom from indulging its man-killing propensities.

Loomis looks amazed at the fresh water lagoon behind Surprise Beach, but keeps his distance from the alligators

Looking toward the northern hill of Saboga village. Natives, chickens, pigs, and other domestic animals occupy the huts with democratic equality

We shortened just in time, for as I was on the point of going below to start the motor, a fierce squall of wind took us from astern and we flew before it with jib and jigger straining. What would have happened under full sail with an unindoctrinated crew (as they say in the navy) remains open to conjecture, but with rocks leering at us from port and starboard as we ran to the southward of Pacheca, I was glad that my luck had overcome my deficiency in weather wisdom.

Although unexpected by us, the squall's coming was known to those who read the signs, and as we neared a spot in the lee of Pacheca, which we had picked as a likely anchorage for the night, we found it already tenanted by a native schooner, her deck crowded with the semi-nude forms of pearl fishermen. The cove being too small for two boats to swing at anchor, we headed southward, and having run two miles, came to a crescent beach of pearl white sand on the southeastern side of an island known as Saboga.

As an anchorage it seemed ideal, even when viewed through the distorting drops of pelting rain which came as an aftermath of the squall. Pacheca protected it from the north, another island from the east, while to westward from south to north Saboga Island formed the lee. Only to southeastward was it exposed, and we had not felt a breath of air from that direction.

Primitive mortar and pestle employed by the Sabogans for grinding wheat and corn.

Soundings gave us a sandy bottom, and in five fathoms on a two-thirds tide we let go anchor some two hundred yards from shore. Then, as the rain slacked off, we launched the dinghy and for the first time set foot on a tropical isle. And for the first time I became acutely conscious that I lack the spirit of your true pioneer. The almost impenetrable undergrowth of the jungle crept down to the very water's edge, and the moist plant parasites on tree trunks as well as the prickly briars of the black thorn, seemed menacing. Cicades buzzed stridently from overhanging branches, and as we walked fearsomely along the soft, enveloping sand, we looked out for scorpions and tarantulas—insects which, no doubt, were looking out for Number One as ardently as we ourselves.

Coming back to the dinghy, we found it afloat on the rising tide and postponed our exploration of the jungle until a warm, bright morning when we could be clad more appropriately than in bathing suits. It was decided for us, however, that we should not ever penetrate the jungle of Saboga Island.

The night passed quietly, illumined incessantly by blinding flashes of lightning from some distant storm at sea. We had often been warned that pinnacle rocks are as characteristic of the region as tiger sharks, and I was up often with the falling of the seventeen-foot tide to make certain that we would not be perched high and dry at low water. With the turn of the tide at one in the morning my worry ceased, and I slept peacefully until daylight and the rumble of thunder awakened us.

A storm was undoubtedly brewing in our exposed quarter, but the aroma of coffee brewing in the galley diverted my attention from it. Jo had

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Hippocampus lying at anchor off Surprise Beach.

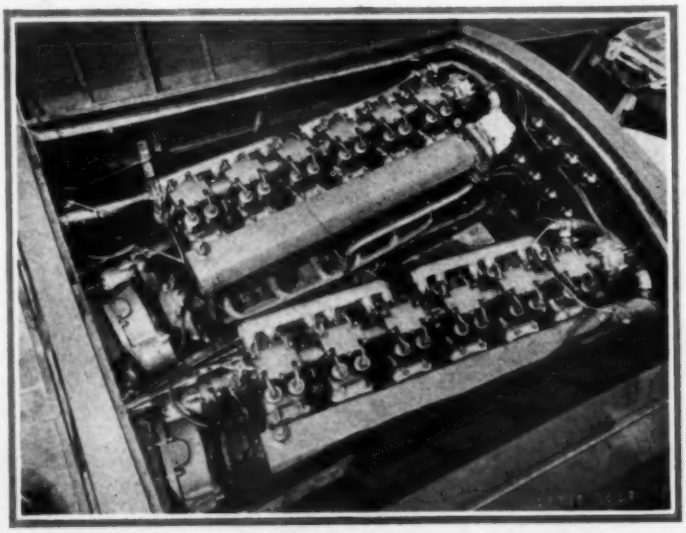
Packard Baby Gar, leading Baby Gar III. The latter boat won the race by taking three straight heats, and Packard Baby Gar finished in second place. These positions have been protested as it is alleged that the motors in these boats do not qualify

Canadians Hold Spectacular Race Meet

Competition for the Fisher-Allison Trophy Brings Out the Largest Field of Starters—American Power-Boat Association Rules Used

WELL, at last we have had a motor boat race which can be called a race! At last we have developed an honest-to goodness gentleman's runabout which will stand all the punishment and gaff which should be expected of such craft! The wise ones predict that it will be the last race, but then—the same wise ones have been predicting this same thing for years and motor boat racing has grown steadily in popularity and results, so we have no fear for the future. If some do not care to race for the sport itself, we feel sure that the absence of their entries in future events will detract nothing from the events.

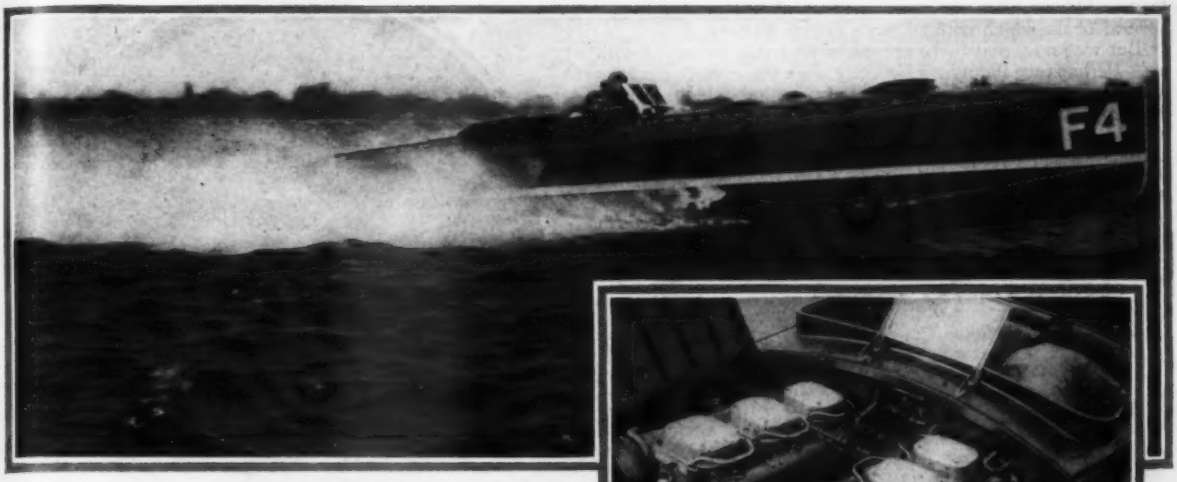
This year's races for the Fisher-Allison Trophy, supposed to be open only to real displacement runabouts of over thirty-two feet in length and powered with one or more stock maine motors not exceeding 3000 cubic inches in piston displacement, not only brought together the best racing craft which have ever started together in a single event—but in addition, it brought forth more than the usual display of racing fireworks and much difference of opinion, particularly on the point as to what is a marine engine, which query, by the way, is likely to remain unsettled as long as boats float and motors mote.



The engine installation in Baby Gar III. Two six cylinder motors were used which were connected through a gear box to a common propeller shaft

Those in charge of the races at Hamilton, where the races were scheduled to take place in honor of that great sportsman, Harry Greening, whose efforts to make past Fisher-Allison races a success will be remembered, were over-anxious that the events be interesting from a spectator's standpoint and as spectacular as possible. With this end in view, a general invitation was extended to many motor boatmen to come to Hamilton to race. We will say at the start that from these standpoints, the races were a remarkable success. In extending the invitations, little or no thought was given as to whether the boats would qualify or whether strict interpretation of the racing rules was to be adhered to. Neither was much thought given as to having the rules lived up to in respect to amateur drivers, real displacement hulls, and the thousand and one other technical features which unfortunately are tied up closely to every racing event of this kind which is supposed to demonstrate and prove something or other and which particulars are always observed more in the breach than in the adherence.

A very short time before the dates on which



A view of Rainbow II, before she withdrew at the beginning of the second heat due to insufficient hull strength to stand the heavy weather on that day

The two six cylinder type G-R Sterling motors in Rainbow II

the races were scheduled to take place it appeared that the event was to fall through, as entries from only two boats had been received and the eligibility of both of these—it appears, was later questioned by some of those owners who had not seen fit to enter their craft within the time allowed by the rules and in fact, in more than one case, have not as yet entered, strictly speaking.

As noted above, the race for the Fisher-Allison Trophy was for the purpose of developing a real runabout, fast, seaworthy, strong, and all that. The rules also provide that only stock marine motors are eligible to compete and that the manufacturers of the motors must file a sworn affidavit with the committee, stating that the motors are in every respect stock and manufactured for marine purposes only. Rules provide that a motor which was orginally designed for aviation purposes can not qualify.

Nick Nack, with Commodore Ericson at the helm

While we will admit that it is beyond us to define what constitutes a marine engine and what particulars a motor must have to fall outside of this class, yet we do know from what we saw with our own eyes at Hamilton that every motor there was capable of and did drive the boat in which it was installed, through the first fifty mile heat without trouble of any kind. Subsequent heats brought a few breakdowns, but these all happened to power plants whose eligibility was not originally questioned. If such a test is in any way a measure of the engines' capabilities or their ability to perform satisfactorily in

Miss St. Lawrence, without doubt the prettiest performing boat in the race which was running in third place up to a few minutes before the end of the third heat when she was obliged to withdraw

marine service, then we must say that all the motors in the several boats which entered were marine motors.

But we know that there are many who will not agree with us. Perhaps we thought differently once ourselves. Perhaps we are still of the opinion that an engine which can be honestly classed as a marine engine for racing purposes should not be known as a marine engine perfectly suited for all classes of marine service, any more than a heavy duty-standard or Buffalo could be classed as a good racing engine. Each has its own place and each its limitations. It is unfair to condemn either in such a broad field as the term marine engine must cover.

Differences of opinion on what a marine engine is, began

The twelve cylinder Peerless motor in Miss Peerless II

Miss Peerless II which gave a good performance in the first heat in spite of mechanical trouble with her oil pump

to spread just as soon as the boats reached Hamilton. Owing to the lateness of the entries, there seemed to be a great deal of mystery about what craft would take part. One by one they appeared for their official survey and inspection. The first good natured jests grew into more serious insinuations. Gar Wood, who, up to this year had never entered a boat in the Fisher-Allison race, was called a burglar when he opened the hatches of his Baby Gar III and those nearby saw two six-cylinder motors of approximately 2700 cubic inches piston displacement, installed and geared together through a gear box to a common propeller shaft. Those who previously had been most interested in the race had grown to believe it was their race and that Commodore Wood who had won practically every other trophy worth while in this country and abroad, would keep his hands off this event.

Perhaps the easy wins in some of the other competitions for this trophy had made them over confident. We doubt whether they had viewed a race with only one, two or three boats finishing from the angle of what a farce such an event really is. True it is, that there is much glory and honor and credit in winning a 150 mile race with as stringent rules as are provided for this event, even though there may be only

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Ionic III, leading the field. This boat was noted for her consistent and smooth running qualities. On total elapsed time for the 150 *miles Ionic III finished in third place*

Nick Nack, powered with a six cylinder Hall-Scott motor, the smallest piston displacement in the race, yet the boat which on points, finished third

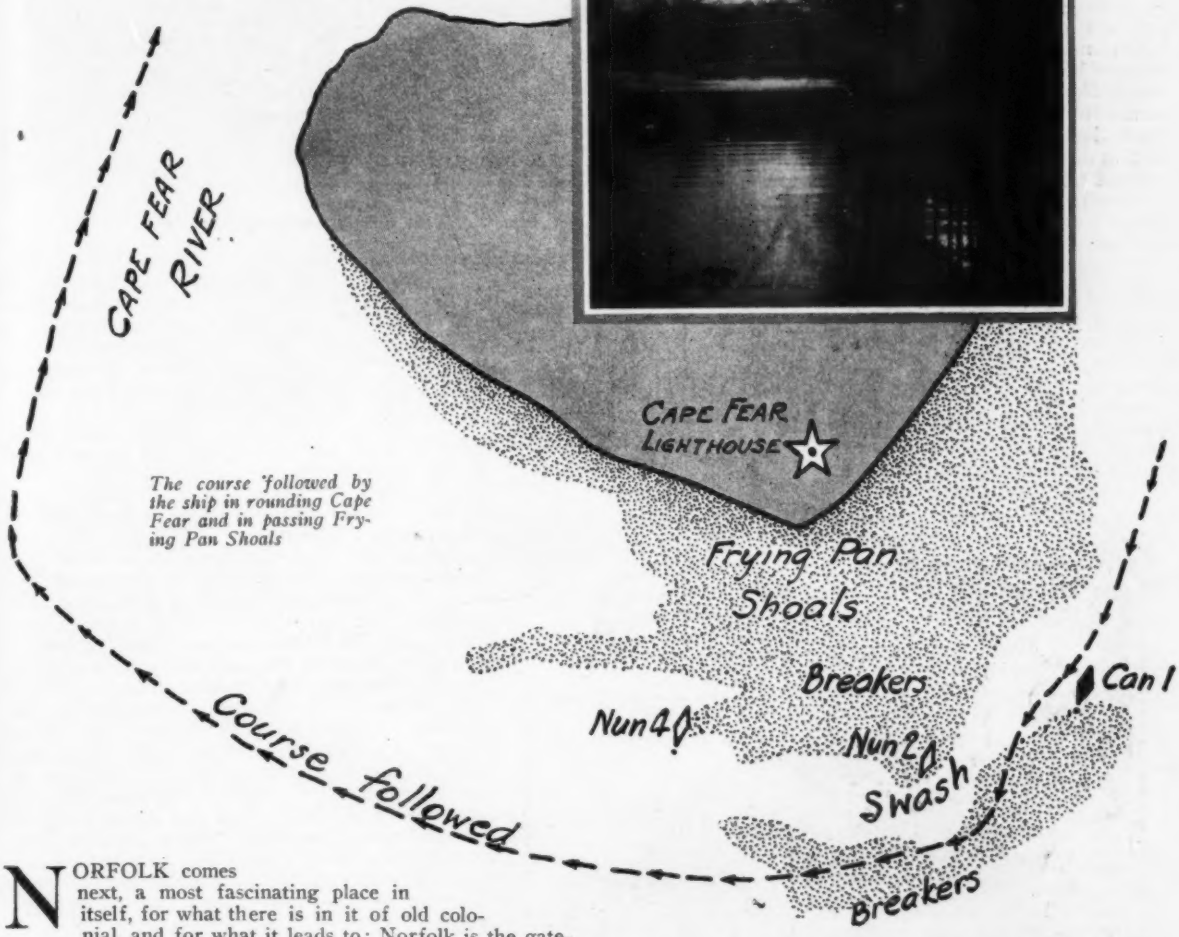
Southward With the Birds

A Tale of Wanderings at Sea and Adventures Which May Befall the Cruiser on a Voyage to the Land of Sunshine

Part Two

By Aland C. Rover

Queen Anne's Creek, below Bolton's Bridge, at Edenton, N. C.



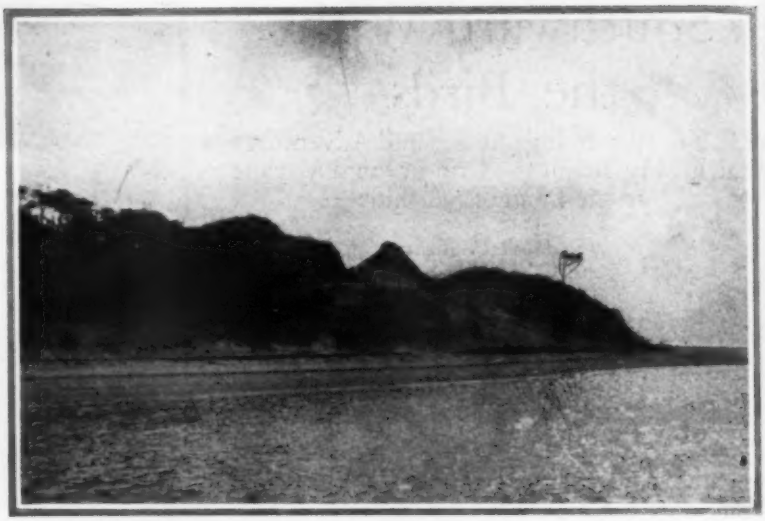
The course followed by the ship in rounding Cape Fear and in passing Frying Pan Shoals

NORFOLK comes next, a most fascinating place in itself, for what there is in it of old colonial, and for what it leads to: Norfolk is the gateway to the South and all that there is left in the South of the legendary days before the Civil War. Some one may feel inclined to doubt the real, representative, Southern character of Norfolk, because of the heterogeneous elements of strange life, which the World War brought to it: but he needs not go very far to change his mind. Let him try to make his way into one of the so-called public wharves, which the city has provided for the convenience of the small motor-boatmen and, for the trial of their souls tucked safely away behind and around the big private docks of ferries and steamers. If he arrives without having been run down by any of the larger craft or rammed through by any of the lesser fisher folk, he will find himself surrounded by a crowd of dusky boatmen, laughing, shouting, howling, singing;—and he will be enlightened at once as to the nature of the locality. Here begins the land of the noisy negro, most of the time jolly and good-natured, friendly and pleasant, happy and satisfied, and that land is the South. The North seems to make the negro much soberer, almost gloomy, as it makes the white sharper and rather more tense: but the sun of the South seems to warm the latter into greater affability of manner and the former into greater cheer. As a consequence, the South appears to the traveler, a country of smiles.

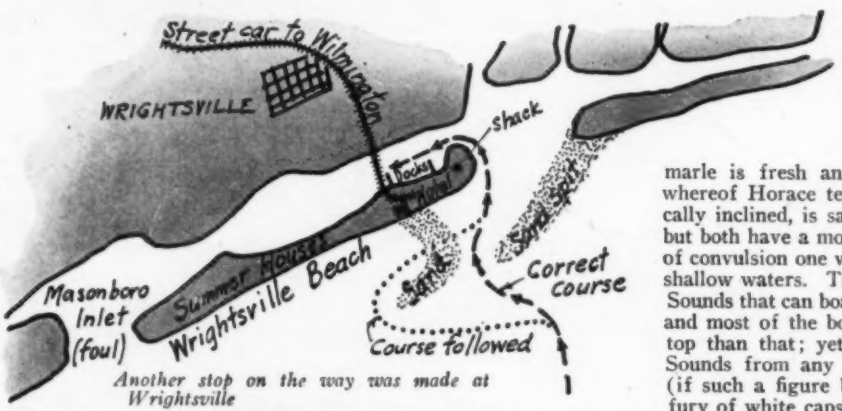
Norfolk is also, for the yachtsman, the gateway to a most interesting region, which Mother Nature has cut off almost wholly from the rest of the Nation. All that part of the country that centers around the North Carolina Sounds, and that other part that boarders on the Atlantic as far south as Charleston, are out of the path of modern life. The main trunk lines of the railroads, connecting Richmond with Charleston through the interior, do not touch it: of harbors to invite shipping, it has almost none, Wilmington being the only one worthy of the name: its entire coast is so fringed with dangerous shoals that skippers always give it the widest possible berth. Hatteras, the wicked one, stands out from it almost to symbolize the unfriendly quality of the whole coast line. Left lonely by land and by sea, that region—where common is the landing at villages twenty or thirty miles from the nearest railroad station—is a region of primitive resources: lumbering in dense forests of pine and vast cypress swamps, fishing, hunting—we even carried off the skin of a bear from one of the North Carolina woods: and with all this, the free and easy life that thrives in the sparsely settled communities, where the jars of the complicated

machinery of modern civilization are not felt so frequently or so keenly. It is a wild country, but handsome and hospitable and it puts to the test the skill of the yachtsman who cannot find so numerous along the beautiful and deserted shores those old standbys, the gasoline station and the repair shop. Moreover, the ubiquitousness of the shoals and the undependableness of the weather—it is a region where the winds from the ocean beat hardest—make care necessary, knowledge useful and coolness, desirable.

It is not very far south of Norfolk that one meets the first signs of the semi-tropical vegetation of the coastal plains, although the winter climate does not recommend itself as at all semi-tropical or even hemi-semitropical. A few miles below Norfolk, as one chugs along the canals from the Elizabeth River to Albemarle Sound, one sees the first specimens of that most stately of trees, the cypress: and not much farther, in the swamps of Albemarle, the cypress begins to be bearded with Spanish moss. The first live-oaks make their appearance at Beaufort, at the bottom of Pamlico Sound, and the first palmettoes on the low shores of Cape Fear, where also the Spanish bayonet is a towering wayside weed. Thus the slow proceeding yachtsman,—almost as slow as the mills of the gods, but not always so sure—works himself gradually into the natural and social environment of the Southern countries, instead of being bolted by an express train from the white stillness of a frozen Yuletide into the midst of golden oranges and browning cocoanuts. I don't say that there is any advantage accruing to him thereby, but, since we have gone through the experience, we like to think it is the fine thing.



Sand dunes and holly thickets inside of Bear Inlet



Another stop on the way was made at Wrightsville

The old Governor's Mansion at Southport, N. C.

Albemarle and Pamlico are two more bodies of water likely to tempt the motor-boatman into heartfelt, if per-adventure brief, argumentation as to what may be rightfully considered the essential characteristics on an inland, or inside, passage. Albemarle is fresh and tawny, like the *flavus Tiberis*, whereof Horace tells tales, and Pamlico, less classically inclined, is salty and generally speaking green; but both have a most singular way of falling into fits of convulsion one would hardly think possible in such shallow waters. There is not a place in either of the Sounds that can boast more than twenty feet of depth, and most of the bottom is a great deal closer to the top than that; yet, when any wind blows over the Sounds from any direction, they fly off the handle (if such a figure be allowed) and rise in a mighty fury of white caps, four or five feet high, that make one think the world—the world around the Sounds—is coming to an end in a few minutes: but in a few minutes, as soon as the wind veers off, everything is again as quiet as a goldfish bowl. I recall that in a trip down Albemarle Sound, a trip extending some forty miles and lasting about five hours, we passed through four or five of these miniature storms, coming and going like the bad moods of a spoiled child. They are no jokes, in spite of their illogical absurdity. Since the water is shallow, the waves cannot expand

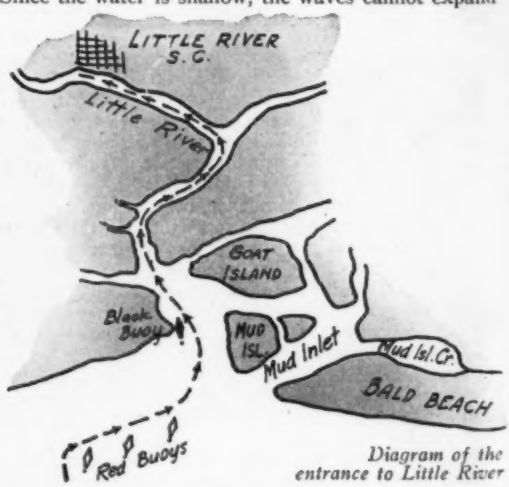
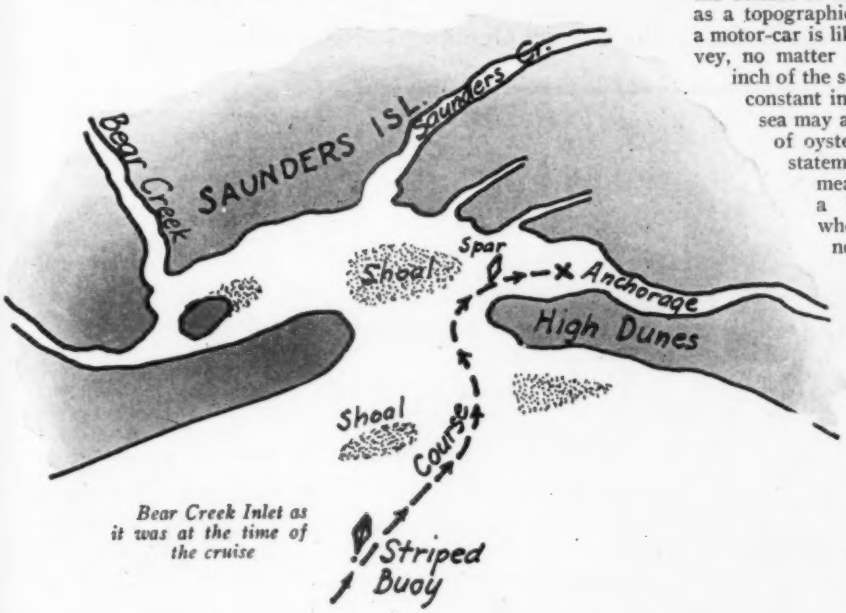


Diagram of the entrance to Little River

Southport's historic old Court House



Bear Creek Inlet as it was at the time of the cruise

stretching reaches of sand that preclude access or make it precarious. One night we stopped in Roanoke Marshes and that was a delightful resting abode, with good docks and a fair shelter in a fishing settlement, completely deserted for the winter. The next night we tried Wyesocking Bay and we had not proceeded far toward shore, avoiding shoals and spits, before our skeg thumped hard against a rock, where the chart assured us of at least eight feet of water. No damage ensued and, shortly afterward, we lay at anchor not far from the worthy town of Nebraska; but a bang against his boat always makes the sailor sick at heart and we felt sore and uncomfortable until we had left the waters of Pamlico, for which the charts are well-meaning counsellors but not always trustworthy.

I open a parenthesis. I do not mean by the latter statement to pass any rash and harsh judgment upon the charts published by the U. S. Coast and Geodetic Survey. They are a wonderful work and without them, traveling along the coast would be extremely difficult, if not actually impossible—impossible, that is, without assuming the character of an exploration fraught with dangers. But it lies in the nature of things, that a chart cannot describe the bottom of the sea with mathematical precision, as a topographical map cannot record every bump a motor-car is likely to encounter on a road. A survey, no matter how accurate, cannot sound every inch of the sea: moreover, tides are markedly inconstant in height and the very bottom of the sea may actually grow upward, as in the case of oyster reefs and coral formations. My statement, therefore, should be taken to mean nothing more than this: wherever a boat approaches shallow waters, whose depth indicated on the charts is not much greater than its own draft, the risk of running a-ground is always present, and the charts ought to be used with great caution.

Pamlico has left some grateful impressions on us, after all, even though it shook us roughly one day and gave us a hard bang on another. If it were nothing more than the sunset in whose glory we cast anchor at the mouth of Adams Creek, at the beginning of the canal that leads to Beaufort from the estuary of the Neuse, it would be worth standing all the vagaries of

(Continued on page 96)

to any great length without breaking and, therefore, they stir up a choppy sea of the nastiest variety, on which, as a cheerful traveler described it, the boat falls down on all sides at once. And, moreover, if a boat has a deep draft, it is in danger of striking bottom in the trough of the waves, as if it were a man with shoes too long for his feet, who stumbles against every uneveness of the road. One dares not think too lightly or too slightingly of those two lake-like and landlocked ponds: they may exact repentance for lack of respect!

Among other things, there is a great scarcity of harbors along their shores, and most of the harbors that there are, are to be approached with diffidence. Albemarle protects itself by a formidable barrier of cypress swamps, and this in turn sends off an outer guard of stumps and knees almost as ugly as rocks: and Pamlico has oyster reefs and far out-

A famous landmark in oak at Southport

The Ocean City Motor Boat Club, Ocean City, N. J.

Photographs by M. Rosenfeld

Proper Routine for Yachts and Yacht Clubs

The Fifth Article in the Series on the Correct Organization of the Yacht Club

The Lu Lu Temple Yacht Club of Atlantic City

YACHTING etiquette, or yacht routine, as it is sometimes called, is fairly well standardized among the yacht clubs of the country, and is as important a branch of club life as any. The by-laws of a club should provide for the form of yacht routine which is to be followed, and it is very important that members live up strictly to the provisions.

Flags and colors as prescribed in the by-laws are to be flown only when the boat is in commission. A boat may be hauled out and still be in commission, in which case, she should follow the same yacht routine as when afloat. On the other hand, a yacht may be moored, or even under way, but not be in commission, and in such a case, she does not fly the customary flags and colors, or follow any of the other prescribed routine.

The United States yacht ensign should be displayed at anchor at all times between morning and evening colors, that is, between eight o'clock in the morning and sundown. At other times, when under way, the ensign should be displayed when in inland waters, when meeting or passing other vessels and on approaching lights, vessels, lighthouses, military stations, etc. Motor vessels display the yacht ensign from a staff at the stern. Sailing yachts, when under way, display the ensign at the after peak, and when at anchor at the stern on the starboard side of the boom.

The United States jack

The home of the Cape May Yacht Club

should never be displayed when the yacht is under way. It may be displayed while at anchor at the jackstaff from 8 A. M. to sunset, on Sundays, holidays, and on other festive and gala occasions.

A flag officer should always display his flag at the main truck while his yacht is in commission, except while he is on a cruise with another club, of which he is a member, but not an officer. The officer's flag is flown both during day and night.

The flag of the senior flag officer present officially at the club house or anchorage, should be displayed at the starboard yardarm of the club main flagpole.

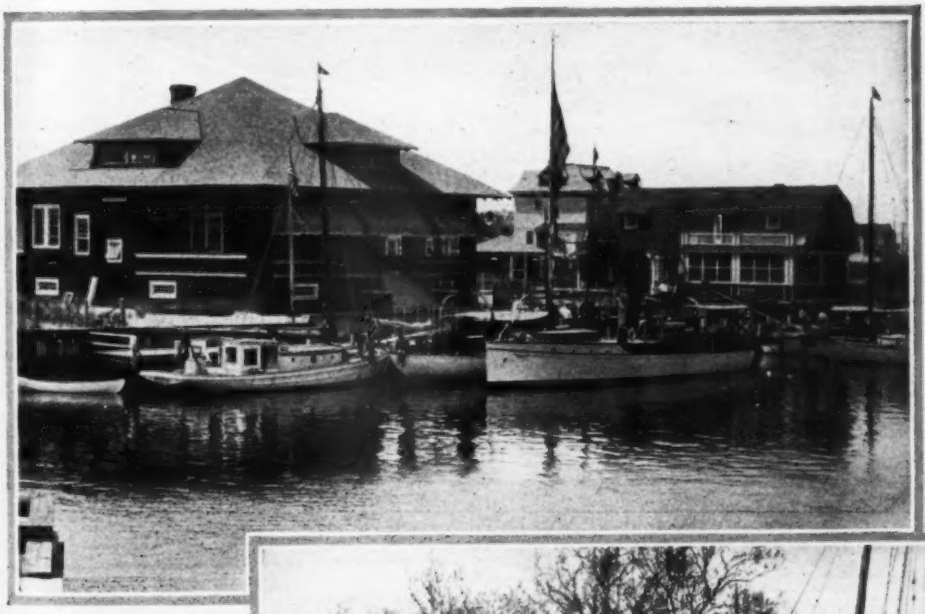
The club house of the Holly Beach Yacht Club

The club burgee should be displayed by yachts in commission as follows: On a yacht with two or more masts, at the fore truck; on a single masted yacht, at the truck when at anchor; on a motor yacht with one mast and a staff at the bow, at such staff; and on a mastless yacht, at a staff at the bow when at anchor.

The private signal should be displayed by yachts in commission whenever the ensign is hoisted as follows: On a yacht with two or more masts, at the main truck; on a ketch or yawl, at the mizzen truck; on a single masted yacht, at the truck when under way; on a motor yacht with one mast and a staff at the bow, at the main truck; on a mastless yacht: at a staff at the bow when under way.

The club flag should have a length of approximately three-fourths of an inch for each foot of over-all length of the boat. The private signal should have a length of one inch for each foot of height of the truck from the water on motor yachts and one-half of one inch for each foot of height of truck from the water on sailing yachts.

The absent flag is a blue rectangular one. (*Cont. on page 66*)



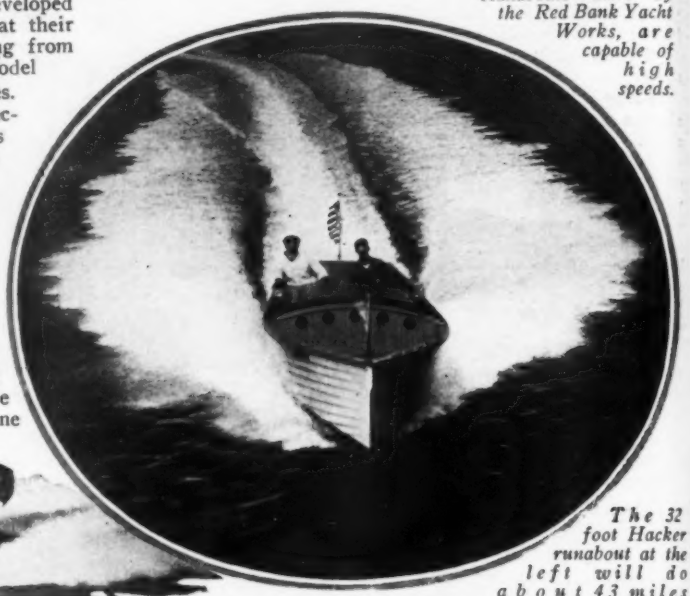
The Ventnor Yacht Club of Atlantic City

The Corinthian Yacht Club of Philadelphia at Essington, Pa.

Fast Lap Strake Runabout

An Adaption Of the Seabright Dory Model to High Speed Service Is Made By the Red Bank Yacht Works

A NEW type of high speed runabout has been developed recently by the Red Bank Yacht Works, at their shops in Red Bank, New Jersey. Departing from the usual style, the famous Seabright Dory Skiff model has been adapted for fast work by changing its lines. slightly and installing a motor able to develop the necessary power. It is proposed to complete these hulls in a standardized way and equip them with motors to suit. By reason of their shallow draft and the type of construction they are equally adapted to shallow water or deep sea service. The one pictured is 26 feet long with a beam of 6 feet. The motor installed is very powerful and capable of driving the boat at almost 40 miles per hour. On account of the lap strake method of construction used in planking these boats the necessity for caulking them is eliminated. Greater strength is insured as well as greater stiffness and seaworthiness as compared to the ordinary flush type of boat. The Red Bank Yacht Works do not confine their efforts to one type of hull but also build high class boats of other varieties. The 32 foot by 6 foot 3 inch Hacker design runabout which they build is capable of very high speeds, and it is said that 43 miles is easy for it.

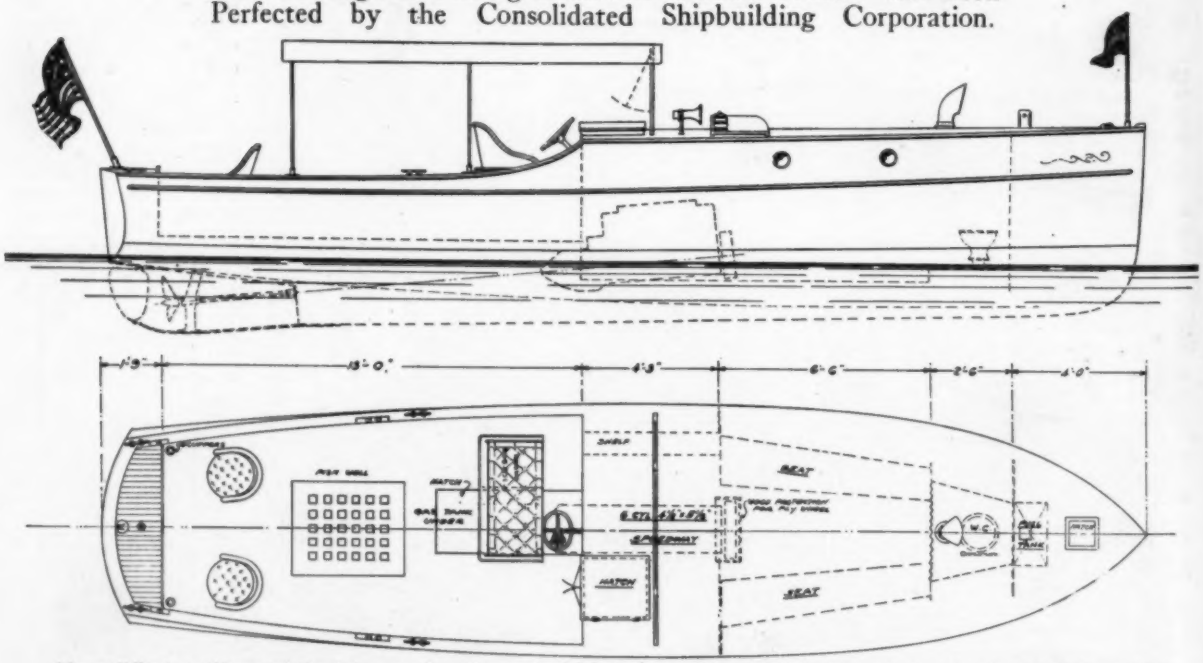


Runabouts built by the Red Bank Yacht Works, are capable of high speeds.

The 32 foot Hacker runabout at the left will do about 43 miles

Comfort For the Fisherman

A New Design in Fishing Boats For Florida Waters Has Been Perfected by the Consolidated Shipbuilding Corporation.



Many difficult problems of the fisherman have been solved by the Consolidated Shipbuilding Corporation in developing a boat particularly for Florida fishing service. Careful study has been given to the requirements of this work and designs have been reproduced which have been immediately accepted by yachtsmen who enjoy going after the large Southern game fish. Sancho, being built for Theodore G. Dickinson, will be a new addition to the fleet this winter. Her dimensions are 32 by 8 feet and with Speedway motor installed a speed of 18 miles is possible as well as a very slow trolling speed.

Questions and Answers on Lessons Nos. 6 and 7

The Compass, Variation, Deviation, Applying Compass Errors

1. Q: How should a compass be placed on a boat in reference to the keel line?
   A: *Imaginary line drawn through center of compass and lubber lines should be over keel line or parallel to keel line.*
2. Q: How do you determine whether the compass on a boat is correctly placed?
   A: *Draw long line on deck which if continued would pass through center of compass and lubber line. Ascertain whether this line is along center line of boat or parallel to keel line.*
3. Q: Does the North Pole of the compass point towards magnetic north or geographic north?
   A: *Approximately magnetic.*
4. Q: What liquid is used in the compass?
   A: *Generally water and alcohol. Sometimes oil. Sometimes kerosene. Sometimes gasoline.*
5. Q: What is the object of the liquid used in the compass?
   A: *To help buoy the card and to prevent freezing and to steady the card and to prevent moving on account of boat's vibration.*
6. Q: Into how many points is the compass card divided?
   A: 32.
7. Q: Into how many degrees is the compass card divided?
   A: 360.
8. Q: How many degrees in one point? A: 11¼.
9. Q: Name the cardinal points. *A: N, E, S, W.*
10. Q: Name the intercardinal points. *A: NE, SE, SW, NW*
11. Q: Name the quarter points which have two names.
    A:

New Method	*Old Method*	*New Method*	*Old Method*
NNE ¼ E	NE x N ¼ N	SSW ¼ W	SW x S ¼ S
NNE ½ E	NE x N ½ N	SSW ½ W	SW x S ½ S
NNE ¾ E	NE x N ¾ N	SSW ¾ W	SW x S ¾ S
ENE ¼ E	E x N ¾ N	WSW ¼ W	W x S ¼ S
ENE ½ E	E x N ½ N	WSW ½ W	W x S ½ S
ENE ¾ E	E x N ¼ N	WSW ¾ W	W x S ¼ S
ESE ¼ E	E x S ¼ S	WNW ¾ W	W x N ¼ N
ESE ½ E	E x S ½ S	WNW ½ W	W x N ½ N
ESE ¾ E	E x S ¾ S	WNW ¼ W	W x N ¾ N
SSE ¾ E	SE x S ¼ S	NNW ¼ W	NW x N ¼ N
SSE ½ E	SE x S ½ S	NNW ½ W	NW x N ½ N
SSE ¼ E	SE x S ¾ S	NNW ¼ W	NW x N ¾ N

12. Q: Give the two methods of naming by degrees the following points:
    NE. A: *N 45° E; 45°.*
13. Q: SE. A: *S 45° W; 135°.*
14. Q: SW. A: *S 45° W; 225°.*
15. Q: W. A: 270°.
16. Q: NW.
    A: *N 45° W; 315°.*
17. Q: W x S¾ S.
    A: *S 70° 18' 45" W; 250° 18' 45".*
18. Q: WSW ¼ W. A: *S 70° 18' 45" W; 250° 8' 45".*
19. Q: What would be the name of the point equivalent to 42° 11' 15"? A: *NE ¼ N.*
20. Q: What would be the name of the point equivalent to N 56° 15' E? A: *NE x E.*
21. Q: What would be the name of the point equivalent to 92° 48' 45"? A: *E ¼ S.*
22. Q: What would be the name of the point equivalent to S 87° 11' 15" E? A: *E ¼ S.*
23. Q: What would be the name of the point equivalent to 146° 15'? A: *SE x S.*
24. Q: What would be the name of the point equivalent to S 33° 45" E? A: *SE x S.*
25. Q: What would be the name of the point equivalent to 303° 45"? A: *NW x W.*
26. Q: What would be the name of the point equivalent to N 56° 15" W? A: *NW x W.*
27. Q: Name all the four point courses.
    A: *NE; SE; SW; NW.*
28. Q: Name the reverse course of SW x W ¼ W.
    A: *NE x E ¼ E.*
29. Q: Name the reverse course of 315°. A: 135°.
30. Q: Name the reverse course of SW x S ¼ S.
    A: *NE x N ¼ N.*
31. Q: Name the reverse course of SSW ¾ W.
    A: *NNE ¾ E.*
32. Q: What is variation?
    A: *Variation is the angular difference between true N. and a free needle suspended at the point in question.*
33. Q: What is deviation?
    A: *Deviation is the angular difference between that direction shown by the ship's compass and a free needle suspended at the point in question.*
34. Q: How do you determine the amount of variation for a particular locality?
    A: *From charts and other Government publications.*
35. Q: Describe briefly one method of determining the deviation of a compass.
    Q: *By reciprocal bearings taken from the boat and shore at the same time.*
36. Q: What is local attraction?
    A: *Local attraction is that effect on a boat's compass caused by magnetic influences not on the ship itself other than the magnetic North Pole.*
37. Q: How would you determine the local attraction for any particular locality?
    A: *It is stated on charts, and in Coast Pilots and Government publications. Of course local attraction may be actually determined by the effect which it causes on the compass for any particular locality giving proper attention to existing variation and deviation.*
38. O: What is a true course?
    A: *True courses are those referred to the true north or true compass rose of the chart.*
39. O: What is a magnetic course?
    A: *Magnetic courses are those referred to the magnetic north or the magnetic compass rose on the chart.*
40. Q: What is a compass course?
    A: *Compass coures are those shown by the compass on a particular boat for a particular heading of the boat.*
41. Q: What kind of course (true, magnetic or compass) do you prefer to work with on a motor boat when sailing short distances?
    A: *Magnetic courses.*
42. Q: What is meant by easterly variation?
    A: *When the magnetic North is to the East of the true North; when magnetic directions are to the right of true directions.*
43. Q: What is meant by westerly variation?
    A: *When the magnetic North is to the West of the true North; when magnetic directions are to the left of true directions.*
44. Q: What is meant by easterly deviation?
    A: *When the compass north is to the East of the magnetic North; when the compass directions are to the right of magnetic directions.*
45. Q: What is meant by westerly deviation?
    A: *When the compass North is to the West of the magnetic North; when the compass directions are to the left of magnetic directions.*
46. Q: If the variation at Portland Me., is 15° westerly, is it necessarily the same at New York City?
    A: *No.*
47. Q: If the deviation on a particular boat is one point westerly when sailing NE, will it likely be the same when heading SE?
    A: *No.*
48. Q: If you have a westerly deviation, do you steer to the right or left of the magnetic course by your compass?
    A: *Right.*
49. Q: If you have an easterly deviation, is the correct magnetic course to the right or left of the course indicated by your compass?
    A: *Right.*
50. Q: When sailing in locolities where the variations is westerly with zero deviation, do you steer to the right or left of the true course?
    A: *Right.*
51. Q: Will a true course be to the right or left of the compass course when sailing in localities with easterly variation and zero deviation?
    A: *Right.*
52. Q: What is the net error which must be accounted for to convert a true course to a compass course with two points westerly variation and one point easterly deviation?
    A: *One point W.*
53. Q: What is the net error which must be accounted for to convert a true course to a compass course with two points westerly variation and ½ point westerly deviation?
    A: 2½ points W.

(Continued on page 98)

Irene, A 28-Foot Speedabout

A Complete Design and Specifications for Building A Rugged and Substantial Type of Fast Runabout

Designed Exclusively for Motor Boating

By John L. Hacker

FOR the particular benefit of those who wish to have a fast boat which is substantial enough to stand up under continual service, this little speedabout has been prepared. This boat is not a light racing hull but a rugged and heavily built craft. It is the largest runabout which has been published in this series so far. A boat of this size offers wonderful possibilities in accommodation and seaworthiness to its owner. Its power equipment is dependent to some extent upon the speed desired. A four cylinder Scripps motor has been specified for those who are satisfied with about 22 miles speed. For greater speeds, the six cylinder Scripps motor of the same model will produce about 27 miles. For still greater speeds, motors up to 125 horse-power will drive the boat in excess of 30 miles.

Owing to the demand for drawings of a larger size than it is practical to reproduce on the regular pages of the magazine, we have introduced a new feature in showing these drawings in supplement form, and reproduced exactly to scale, which in this case is one-half inch to the foot. By the aid of these excellent reproductions it will be possible to build this boat without the least difficulty. It will be possible to use a standard scale rule to measure dimensions directly from the drawings. The tremendous interest shown in all parts of the country in these plans, will be further increased by the exceptional way in which the plans are presented.

The arrangement of this little boat follows conventional practice in runabouts by having a built-in seat at the forward and after ends of the cockpit. Sufficient space remains between these to permit the introduction of several wicker chairs. The engine is carried forward behind a water-tight bulkhead. Handling the boat and the engine is a simple matter, since all controls are centered in the helmsman's position. Naturally a boat of this type is not designed for long distance cruises although for single day runs it should prove an ideal craft. The publication of these plans present an opportunity for many enthusiasts to build a boat designed according to the latest and best boat building practice.

A boat of the size of Irene is probably a little larger than the ordinary amateur builder can safely undertake unaided. A well equipped shop with wood-working machinery and other facilities is almost a necessity on a job of this kind. The labor of hand sawing the pieces necessary on a boat as large as this is almost prohibitive. A suitable place to undertake the construction of a boat is a first essential. This should be a shed or building of proper dimensions, and weather-tight enough so that work may be carried on irrespective of the weather. A level floor or foundation must be prepared upon which the keel can be laid, and properly secured in place. The frames can be gotten out from the drawings and later assembled into place as usual. The stem and transom are also erected into position when completed. The planking operation is one which has been described many times, and care must be exercised that the joint between the planks comes on the centers of the seam battens which are let into the frames. After the hull is completed it must be very carefully dressed and smoothed down preparatory to receiving its initial coat of paint. Caulking and cementing of the seams follows in due course, and the many detail operations of completing the hull are undertaken one after the other.

The installation of the motor, tanks, batteries, and other mechanical equipment follows in proper order. Painting and varnishing can be undertaken during the progress of the work and bulkheads, seats, etc., given their final coats of varnish before they are assembled into place. It must be remembered that during the progress of the work all surfaces which are in contact and inaccessible after the hull is completed should be painted before they are assembled. The specifications which follow are complete in every detail, and the drawings and specifications together comprise a finished product, which is identical in every respect with what would be secured if Mr. Hacker was commissioned to design this boat to your particular order. Many of the fittings which have been specified are prepared especially for Mr. Hacker's boats and the editor will be glad to supply any prospective builders with data as to where these special fittings may be secured. The editor will further be glad to answer any questions on the construction of the hulls which may arise during the work. The complete specifications for building this boat follow:

GENERAL SPECIFICATIONS

Dimensions: The length overall 28 feet, the beam overall 6 feet 8 inches, the freeboard at the stem 3 feet, the freeboard at the stern 2 feet 2 inches, while the draft is 2 feet.

Keel: This is to be a single length of clear white oak or yellow pine, 1⅞ by 4 inches in section. It is to be properly beveled and rabbeted to suit the planking. A shaft hole is to be bored at the proper angle to suit the shaft, and an allowance of ⅛ inch on each side made for clearance.

Stem: This is to be made from a hackmatack knee or a piece of clear white oak 1⅞ inches in thickness. It is to be properly sawn to shape, beveled and rabbeted, and through bolted to a knee of the same stock with three ⅜-inch bolts. It is to be fastened to the keel in a similar manner after which the rabbeting may be completed.

Transom: This may be either straight or curved. If straight to be of ¾-inch mahogany, properly shaped with a ⅞-inch oak cleat on each side. There will also be a ⅞-inch cleat on the top and on each side of the bottom from the keel. There is to be a 1½ by 4-inch stern post mounted on the keel with a substantial hackmatack or oak knee on each side. There will be a batten to take the seam, ⅝ by 1½inches. For a curved transom there will be an upper and lower member of 3-inch white ash or oak sawn to the proper radius. There will be side members of 1-inch oak or ash. A stern post 1½ by 4 inches will be supplied and there will be two cleats extending from the top to lower member, 1 by 2 inches in size. There will be a batten for the seam as before and it will be mounted to the keel in the same manner as described above. It is to be covered with ⅝-inch mahogany, all screw fastened and wood plugged.

STATIONS		0	1	2	3	4	5	6	7	8	9	10	EXTENSION
KEEL			0-4-4	0-2-2	0-1-5	0-1-7	0-3-6½	0-4-2	0-6-1	0-8-1	0-10-3	1-0-7	
CHINE		2-2-0	1-10-0	1-7-1	1-4-7	1-3-1½	1-2-1	1-1-5	1-1-2	1-1-0	1-0-7	1-0-7	
SHEER		4-2-5	4-1-1	4-0-0	3-10-6	3-9-6	3-8-5	3-6-7	3-3-2	3-2-1	3-2-2	3-2-4	
DECK			4-4-2	4-3-0	4-1-6	4-0-7	4-2-6				3-6-0	3-4-6	
BUTTOCK - No - 1			1-4-0	0-9-3	0-6-7	0-6-0	0-6-1	0-6-7	0-8-2	0-9-5	0-11-0	1-0-7	
" " " 2				1-3-5	0-11-3	0-9-4	0-8-7	0-9-2	0-9-6	0-10-6	0-11-6	1-0-7	
" " " 3					1-3-1	1-0-5	0-11-4	0-11-2	0-11-4	0-11-7	1-0-3	1-0-7	
HALF-BREADTHS													
CHINE			1-0-4	1-3-6	2-4-2	2-8-2	2-10-1	2-10-4	2-10-1	2-9-0	2-7-4	2-6-4	2-7-4
SHEER			2-0-7	2-11-5	3-3-6	3-4-3	3-3-4½	3-1-7	2-11-6	2-9-0	2-5-7	2-1-5	2-3-4
WATER-LINE - 1			0-1-5	0-4-4	0-6-6								
" " 2			0-3-4	0-7-4	0-11-6								
" " 3			0-5-3	0-11-1	1-5-1								
" " 4			0-7-3	1-3-4	2-0-0	2-8-3	2-10-2	2-11-1	2-10-6	2-9-7	2-8-0	2-6-3	2-8-2
" " 5			1-0-6	1-10-2	2-5-0	2-9-0	2-11-3	3-0-0	3-0-0	2-11-2	2-9-3	2-7-2	2-9-2
" " 6			1-2-4	2-0-1	2-6-7	2-10-3	3-0-3	3-0-6	3-0-1	2-10-6	2-8-0	2-5-2	2-7-3
" " 7			1-5-3	2-3-6	2-10-0	3-0-6	3-1-6	3-1-6	2-11-7				

ALL DIMENSIONS GIVEN IN FEET-INCHES-EIGHTHS AND HALVES TO OUTSIDE OF PLANKING FROM BASE LINE

Complete table of offsets necessary for building Irene, a 28-foot Speedabout

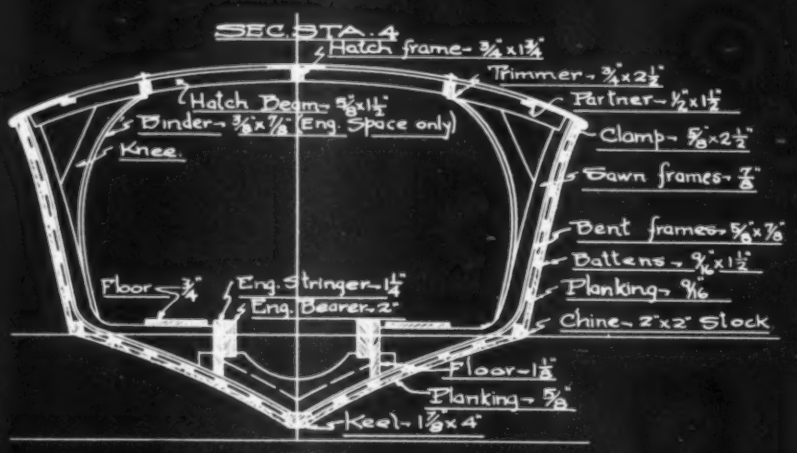
V 434 .C8 1911

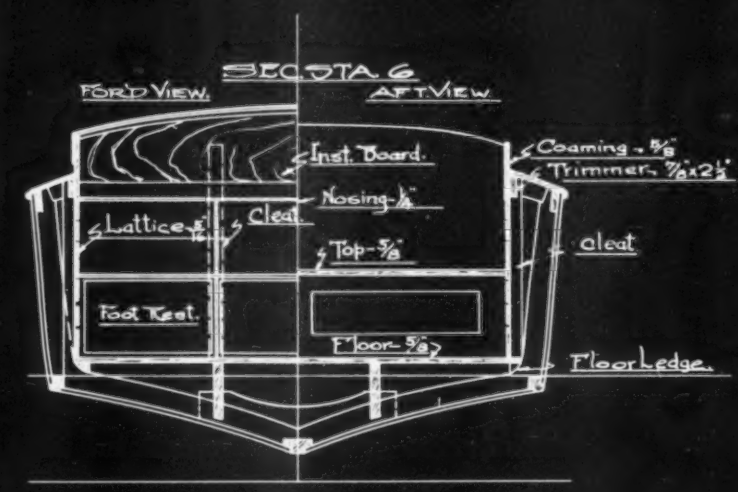
MoToR B

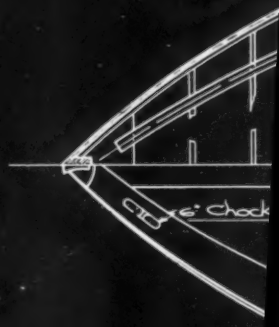
POWER

50 H.P. - SPEED 22 M.P.H.

75 H.P. - SPEED 27 M.P.H.


SECTION 4
Hatch frame- 3/4" x 1 3/4"
Trimmer- 3/4" x 2 1/2"
Hatch Beam- 5/8" x 1 1/2"
Partner- 1/2" x 1 1/2"
Binder- 3/8" x 7/8" Eng. Space only)
Clamp- 5/8" x 2 1/2"
Knee.
Sawn frames- 7/8"
Bent frames- 5/8" x 7/8"
Battens- 9/16" x 1 1/2"
Floor- 3/4"
Eng. Stringer- 1 1/4"
Eng. Bearer- 2"
Planking- 9/16"
Chine- 2" x 2" Stock
Floor- 1 1/8"
Planking- 5/8"
Keel- 1 5/8" x 4"





MOTOR BOATING

119 WEST 40TH STREET
NEW YORK

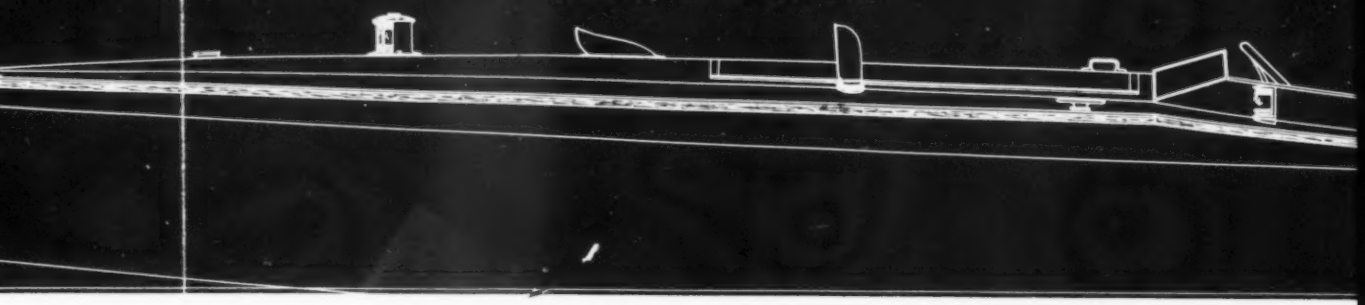
BOATING's BUILD A BOAT

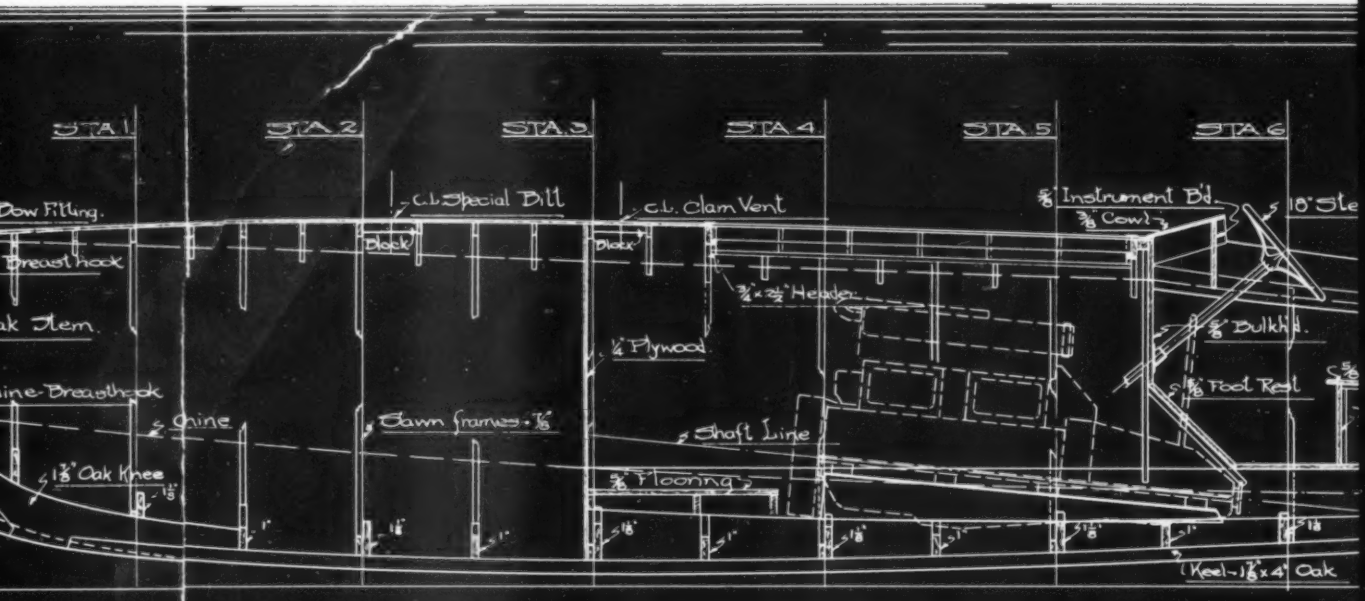
IRENE - A 28 Foot Speedabout

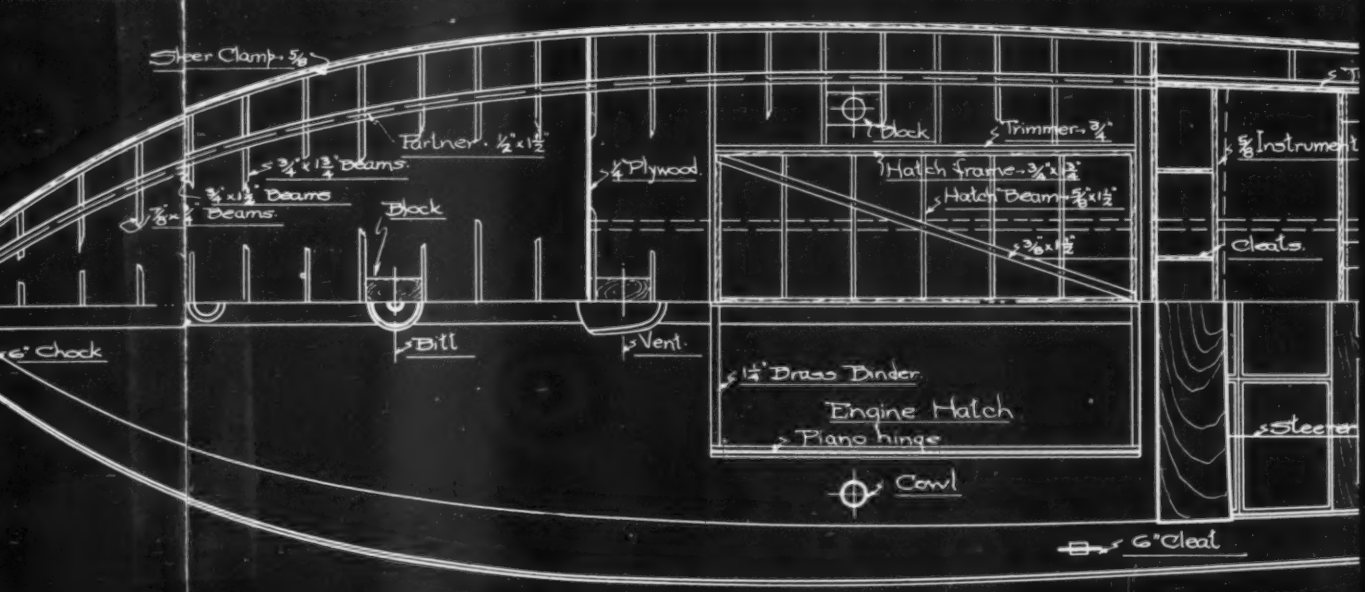
Complete How to Build Plans

Scale 1/2" = 1'

Designed Especially for MOTOR BOATING by
John L. Hacker.

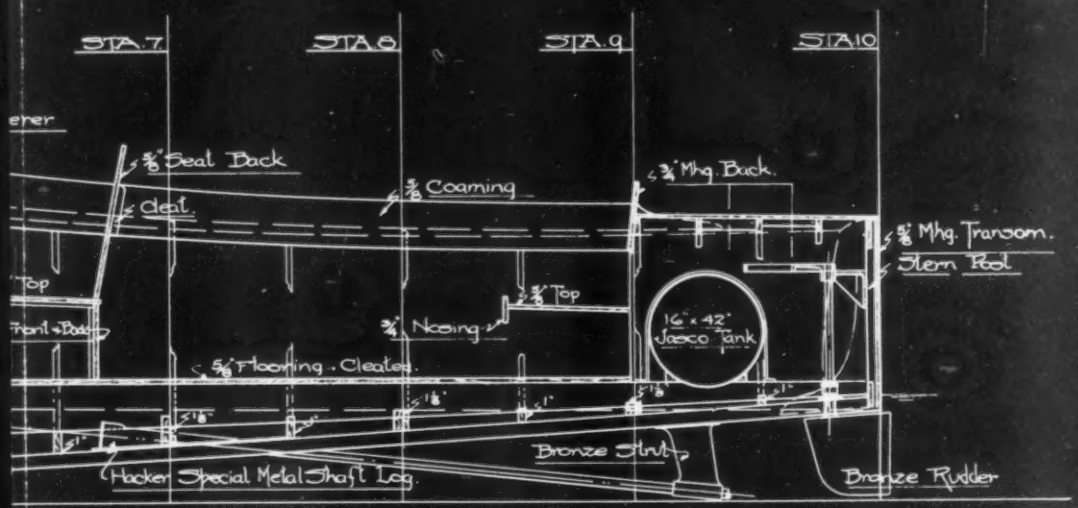


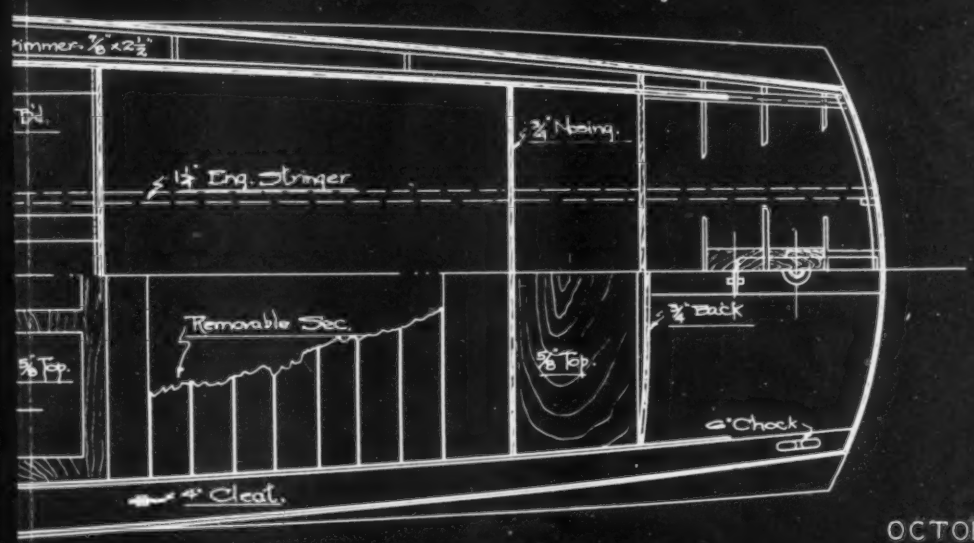




SERIES

DIMENSIONS
LENGTH - 28'-0" BEAM - 6'-8"
FREEBOARD - STEM 3'-0", STERN 2'-2"
DRAFT 2'-0"





Frames: These will preferably be of hackmatack knees and if not obtainable white ash or oak may be used. They will consist of side and bottom members, the sides to be ⅞ inches as well as the bottoms. They are to be either halved at the chine or fastened on the side of the bottom member. They are to have at least six 3-16-inch bolt fastenings or No. 10 copper rivets. They are to be securely bolted to an oak floor of such size as is indicated on the plans. There will be at least six fastenings on each side and when completed they are to be through bolted to the keel with 7-16-inch bolts as far as station No. 4. From here aft two 5-16-inch bolts will fasten through to the rabbet as far as the stern. The bottom members beginning at station No. 7 may be from 1-inch stock and in continuous lengths. There will be an intermediate frame after the hull has been planked of ⅝ by 1-inch white oak. All spaces between the battens are to be filled out with white pine or spruce and with a proper radius at the chine. These frames are to be through fastened with the planking. They are to be joined with a 1-inch oak floor, which should be through fastened to the keel with 5/16-inch stock.

Chines: These are to be shaped from 2 by 2-inch white oak or yellow pine and in single length. They are to be properly beveled and rabbeted to suit the planking and securely screw and rivet fastened to the frames. Bolts ¼ inch in diameter should fasten these through from the bottom and from the side, and they are to be further reinforced at the stem with a substantial knee. There will also be a knee on each side at the transom. These are to be let into the frames, flush to take the planking.

Engine Stringers & Bed: Engine stringers are to be of 1¼-inch clear aero spruce. It is to be in single length shaped as indicated on the plan. They are to be let in over the floors so that they will rest on the intermediates. They are to be through bolted to the floors with ⅜-inch bolts. The tops of the stringers are to form the floor level. The engine bed is to be properly aligned to suit the motor to be installed and should be 2-inch white ash or oak through bolted to the stringer. They are to rest on the floors where they intersect and drift bolted to the same.

Clamps: Sheer clamp to be preferably in a single length of ⅝ by 2½-inch yellow pine. It is to be let into the frames and securely screw fastened with 2-inch screws. There will be a 2-inch breasthook at the stem and a substantial knee on each side at the stern.

Battens: Plank battens on the sides will be 9-16 by 1½ inches. Those on the bottom will be ⅝ by 1¾ inches. These are to be in one length and of long leaf yellow pine or oak, on bottom and sides. They are to be so spaced that the plank seam will meet on the center of the batten. They are to be let into the frames and securely screw fastened with 1¾-inch screws. The two outside battens on the bottom may begin at the chine.

Frame in General: The entire frame is to be neatly trimmed and faired in readiness for the planking. All joints made during the process of construction should be painted with a coat of lead paint before making the final fastenings. Galvanized bolts where used are to be painted with red lead, and where exposed to the water are to be both painted and wood plugged.

Planking: All planking is to be of white cedar, white pine, or cypress if the hull is painted, mahogany if finished natural. It is to be 9-16 inches thick on the sides and ⅝ inches thick on the bottom. It is to be so spiled to meet the centers of battens and to be in as long lengths as practical. All butts are to be made on oak blocks not less than eight inches long and to have at least six fastenings in each part. The side planking is to be made with a flush seam by making a groove in each edge of the plank on its center, and inserting a strand of soft seine twine. The chine seam should be lightly caulked with spun cotton. The seams on the bottom are to have a uniform seam of about 3/32 inches and are to be lightly caulked with spun cotton, rolled in and not pounded. All planking is to be screw fastened to the frames with 1½-inch No. 9 galvanized screws. Use 1-inch No. 9 screws into clamp and chine on sides and 1¼-inch No. 9 into chine and keel on the bottom. The planking is to be copper riveted over burrs to the battens and intermediate frames with 2-inch copper wire nails and No. 13 burrs. All fastenings are to be counterbored with a Forstner plug bitt and wood plugged, using white shellac for a binder.

Deck Beams & Decking: Beams on the main frames are to be ⅞ by 1¾ inches. Intermediate beams are to be ¾ by 1¾ inches. They are to be sawn to a proper radius, and securely screw fastened into the frames. They are to be supported with a knee as indicated on the plan. This will apply to all main and intermediate beams. Those fore and aft of the hatch are to be ¾ by 2½ inches ,and provided with a rest strip to support hatch covers. The hatch trimmer is to be ¾ by 2 inches. Cockpit trimmer to be ⅞ by 2½ inches. All to be of clear white wood. The hatch cover framing is to be of white wood. The frame ¾ by 1¾ inches, small beams ⅝ by 1½ inches, and to have a ⅜ by 1½-inch wind strip as shown on the plan. Insert the necessary fillers for cleats etc. as indicated.

Decking: If finished natural make the covering boards and center plank of ½-inch mahogany the balance of decking off the same material in ½ by 2½ inch strips. These are to be fastened with 1½-inch galvanized nails with two nails at each fastening and screw fastened to the partner. The covering board and center plank are to be screw fastened. Allow a uniform beam of about 3/32 inches which should be lightly caulked with spun cotton. Hatch covers are to be finished in the same manner. All fastenings to be counterbored and wood plugged. If canvas is used for the decks, make covering boards of mahogany and fasten temporarily. The balance can then be covered with white pine or cedar in 6 inch widths with the seams fastened to a batten in the same manner as the planking, the battens being let into the beams. This decking may be of ½-inch stock and galvanized nail fastened except into the partner. When completed remove the covering board, dress and sand throughly and give a priming coat of paint. Then lay a light canvas duck on heavy paint, stretch it well, and fasten in place. When complete apply another coat of filler paint and allow to dry. When perfectly dry fasten covering boards permanently, finish and fill. The hatch covers may also be canvas covered or finished with a mahogany veneer in a single piece.

The design prepared by Mr. Hacker for this issue is for a substantial type of general purpose runabout. It is 28-feet in length and a power plant may be selected to suit individual ideas of speed. The recommended motor is a four cylinder Scripps which will drive the boat about 22 miles. This series of designs will continue through December and the remaining boats will prove as popular as their predecessors. The designs as published during the year include the following:

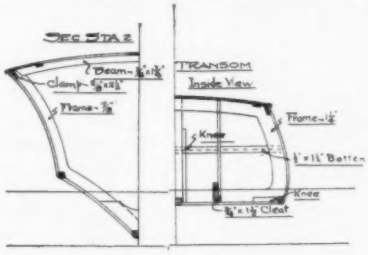
January	**14-foot runabout**	**Marybelle**
February	**20-foot runabout**	**Gladys**
March	**31-foot cruiser**	**Margie**
April	**22-foot hydroplane**	**Miss Victory**
May	**17-foot hydroplane**	**Miss Mississippi**
June	**26-foot runabout**	**Miss A. P. B. A.**
July	**16-foot runabout**	**Lorraine**
August	**18-foot runabout**	**Flapper**
September	**22-foot runabout**	**Fleetfoot**
October	**28-foot runabout**	**Irene**

Cock Pit: This is to have a ⅝-inch bulkhead at the forward end to extend from side to side. The side coaming is to be ⅝ inches, the seat back ¾ inches, and the instrument board ⅝ inches. There will be cleats from this to the bulkhead and cover with a ⅜ inch cowl. The balance of the bulkhead is to finish in three panels, using straight material, the panels being divided with a 5-16-inch nosing. Seat front and back is to be ⅝ inches. There will be cleats to support the seat as well as cleats across the top. It is to be covered with ⅝ material providing a removable top as shown on the plan. The seats may be either of the continuous back or bucket type as preferred. The after seat of the open type to be of ⅝ material and supported with a cleat on each side and a post in the center. The seat front is to be of mahogany as well as the top on the forward seat, covers and tops to be of white pine. Flooring and footboards are to be of ⅝-inch white pine. The after flooring is to have a permanent piece forward and aft with a removable section in between. The footboards are to be in three portions, screw fastened so as to be readily removable. The floor boards under the seats to be fastened in the same way. The sides of the cockpit may be finished natural, or painted, or latticed with 5/16 by 3-inch strips, escutchion fastened.

Bulkhead: The entire cockpit finish is to be of mahogany except as otherwise specified. There is to be a watertight bulkhead at station No. 3 made of ⅜-inch Haskelite or a double ply of ¼-inch white pine with canvas duck between, fastened every 2½ inches with copper clout nails. A hatch opening of approximately 18 by 24 inches to permit access to the fore peak to be screw fastened on a gasket so as to be watertight. The entire framing is to be taped applied on marine glue and screw fastened.

Fender: This is to be of half round mahogany slightly tapered at the stem and stern. It is to be properly aligned and securely screw fastened with holes wood plugged. If a shaped fender is desired, shape from ⅞ by 1¾-inch material and allow a margin or ⅝ inches This is to be protected with ⅝-inch half oval brass, all screw fastened and tapered on the ends.

Finishing & Painting: The entire hull is to be thoroughly dressed and sanded. The bottom and chine seams are to be lightly caulked with spun cotton followed by a coat of hot oil mixed in the proportions of 2/3 boiled linseed oil and 1/3 turpentine, applied boiling hot. Allow this to dry at least 36 hours then follow with a coat of lead mixed without oil,



Sections at Station 4 and at the transom

on the inside to the chine line, and on the bottom up to the water line. If the sides of the hull are painted apply a coat of priming lead paint up to the deck and follow with three coats of marine paint of the desired color. If finished natural fill with mahogany filler and apply a coat of Valspar or equal followed by three additional coats of the same material. The interior may have two coats of the desired color from chine to the deck except where it is exposed, where it shall have three coats. The bottom seams are to be filled with a composition composed of dry lead mixed with Valspar to the consistency of putty and then followed with three coats of Valspar bronze bottom paint or equivalent. The decking and all interior finish is to be properly filled and to have three coats of spar varnish. All coats are to be properly sanded before applying the succeeding coat. The flooring is to have two coats of suitable color.

Fastenings: All fastenings where exposed shall be of bronze or copper. Galvanized fastenings where exposed are to be red leaded and wood plugged. It is advisable to use brass screws below the water line and galvanized ones above. All screws are to be at least three times the length of the material which is to be fastened.

HARDWARE & FITTINGS:

Steerer: This is to be of the scored drum type with an 18-inch rim and controls. It may be mounted on either side and is to have two 3-inch sheaves, one on each side, securely fastened through which a ¼-inch manganese bronze cable shall lead through the necessary fair leads to a special sliding tiller or quadrant. There will be a 3-inch sheave on each side aft mounted on a 1-inch board extending from side to side with sheaves bolted the same. Cut out an opening so that the radius of the tiller will clear. There will be a turn buckle at some convenient point to take up the slack in the line.

Rudder: This is to be of a special type of manganese bronze. It is to extend through a special stuffing box and be supported with a bracket fastened to the stern post.

Strut: This will be of manganese bronze securely bolted to the keel with eight ⅜-inch bronze bolts. The shaft is to be aligned and to be provided with a babbitt bearing.

Shaft Log: This will be of the Hacker type for 1¼-inch shaft and of a long pattern. It is to be properly aligned and securely bolted to the keel.

Cutwater: This may be either of ½-inch half round brass securely screw fastened or of a special type as manufactured by A. J. Bennett Company of Clayton, New York. If the half round brass is used it is to extend at least 2 feet under the keel.

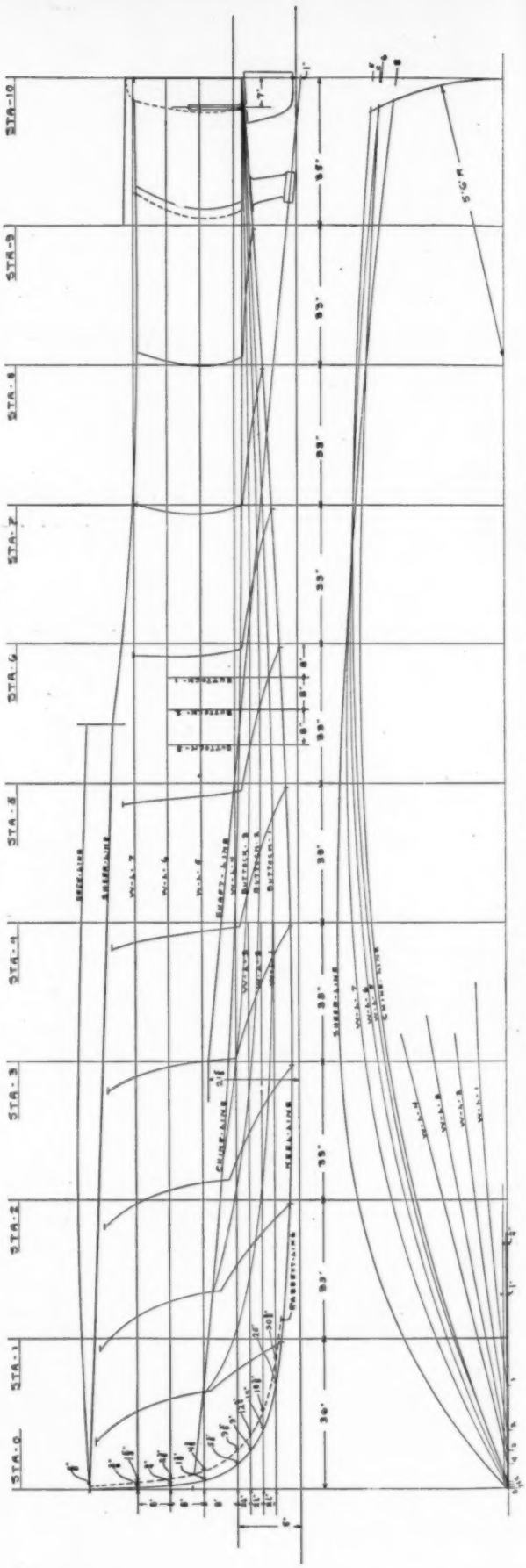
Gas Tank: This is to be of the seamless steel cylindrical type, 16 inches in diameter and 42 inches long. It is to be saddled and well chocked in place, and clamped with 3/32 by 1¼-inch brass or iron wound with canvas and red lead to hold it securely. The filler opening is to be so arranged that it will meet the center plank.

Deck Fittings: There will be one special bow chock, one combination bitt and light with flag socket, one pair of side lights for Class 2 to be mounted on sides of coaming, one large size clam ventilator, two 3-inch cowl ventilators, one cabin type ventilator installed over the water tight bulkhead, two 6-inch cleats, two 5-inch cleats, one 8-inch cleat on after deck and one after flag pole of the combination light type, and two 5-inch chocks on bow and stern.

Hatches: Are to be mounted with piano hinges and edges to be bound with 1¼-inch 18 gauge brass. They are to be provided with suitable handles for lifting, and quadrants for holding them in place when open. All fittings are to be screw fastened with oval head screws in hinges and binder, using ⅞-inch No. 7 in hinges and ⅝-inch in binder. There will be a 4 inch screw type deck plate over the tank or the filler pipe may extend through to the deck.

Motor Installation: The motor is to be a Model D four cylinder Scripps, complete with electric starter. It is to be properly aligned and fitted to a 1¼-inch shaft and then securely bolted to the foundation with bolts or lag screws. The exhaust line is to be of either steel or copper tubing bent to proper shape so as to allow free access. It is to be coupled with flanged joints and to extend under the flooring with an approximately 6-inch offset to extend through the transom about 9 inches above the water. It is to have a packing ring caulked with asbestos rope. There will be a water inlet of at least ⅜-inch copper tubing into the exhaust line to provide proper cooling. There will be a regulation water scoop fitted with a globe valve of the angle type of ¾ inch size. To this will be fitted a nipple and then a swing type check valve. There will also be a piece of ¾-inch pipe close to the motor and a hose connection between, secured with suitable clamps. An overflow to be made up of suitable pipe fittings or tubing is to extend along side of the motor under flooring and up to a special over-

(*Continued on page* 88)



The complete set of lines, a necessary drawing for building he 28-foot speedabout Irene

SMALL MOTOR BOATS

Their Care, Construction, and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the December Prize Contests

1. Describe in detail all steps which should be taken in laying the motor boat up for the winter, with a schedule of operations which can profitably be performed before the covering is closed in.

(Suggested by H. A. H., Baltimore, Md.

2. Describe a cabin ventilator which will operate in stormy or rough weather when all doors and ports are closed, as well as when the boat is laying idle.

(Suggested by H. H. P., Oakland, Calif.)

Rules for the Prize Contest

ANSWERS to the above questions for the December issue, addressed to the editor of MoToR BoatinG, 119 West 40th St., New York, must be (a) in our hands on or before October 25, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before October 25. The Editor reserves the right to make such changes and suggestions in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions above, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 on any article which sells for more than that amount. There are two prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer both.

For answers we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG of which the advertised price does not exceed $5, or a credit of $5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us. The winners should be particular to specify from which advertisers they desire to have their prizes ordered.

An Inexpensive Club Float

Details of Construction, Material Lists, and Description of a Serviceable Float For the Boat Club

Answer to the Following Question Published in the August Issue.

"Explain the construction and anchoring of an inexpensive but serviceable club float."

A Serviceable Club Float

(The Prize-winning Answer)

A FLOAT or landing stage is an essential part of the equipment of any boat club or private boat house. Climbing up or down the side of a slippery dock is not pleasant for the ladies or handy for the crew in taking on supplies. Often the club is in a cove where the water is so shallow, close to shore, that a float is necessary in order that boats may land.

Where cost is not an item of importance, there is no question as to the superiority of the scow type float, but many small clubs must build their own float in order to keep down the expense. For such, the float supported by oil barrels can be recommended as inexpensive and serviceable, requiring but little upkeep, and having reasonably long life. The cost will not be half that of the scow type.

Opinions will differ as to the size. A fair average for small boats would be between thirty and forty feet in length and twelve or fourteen feet wide. The float shown and described has been designed in 10-foot sections so that it will only be necessary to increase the length of the stringers and bill of material accordingly to secure any desired length.

In construction, the outer frame is halved together and the stringers spaced off and morticed for the beams not further apart than 16-inches on centers. The beams with tenons cut to fit the mortices are then put in place and the frame bolted together.

The braces are cut to fit on top of the beams and then notched down flush with the top and securely spiked at all bearings.

The bridging, while it seems unimportant, stiffens the whole construction and prevents sag. The bridging is cut in and nailed at the top only until all are in place, when the bottom is nailed up.

Before laying the floor or deck the barrel chocks are bolted on and the barrels fastened in place with the bungs up, so that they may be pumped out if necessary. The flooring is laid with a ¾-inch space between each board. All joints are cut on a beam, and the whole face nailed with 12 d. nails.

Two good coats of hot wood preservative may not add to the appearance of the float but it will add many years to its life.

Where the float is used close to a bulkhead two spars with suitable fittings will hold it off and allow vertical motion with the tide or weather. To prevent swinging, cable cross braces with turn buckles for tightening are employed. The cables allow a certain amount of flexibility and prevent undue strains on the fastenings.

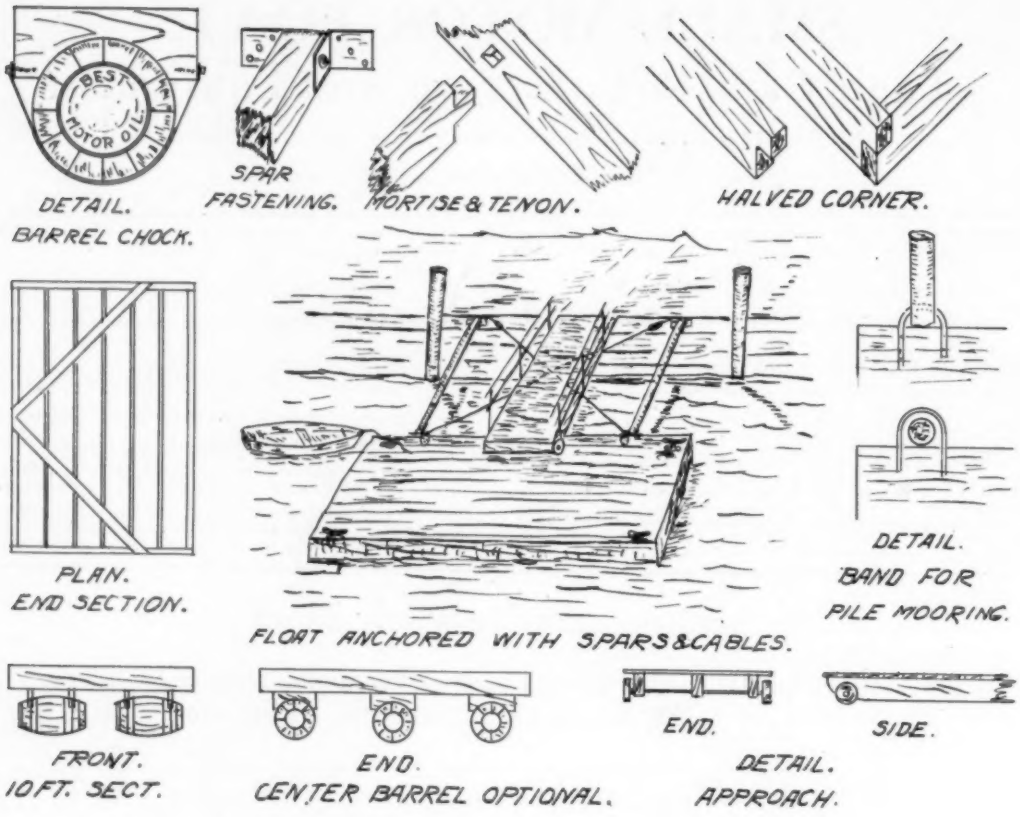
A pile driven at the back near each end, around which iron bands are passed and bolted to the float frame serves equally as well but in some localities will be carried away by ice in the spring..

The runway to the float should not be less than 6 feet wide having three stringers bridged every 8-feet and floored similar to the float. The runway is fastened to shore by a rod through iron hangers which allow it to hinge. The float end is provided with wheels on a long axle so that it may adjust itself to the rise and fall of the tide and motion of the float. Where the wheels bear on the float the floor is covered with a ¼-inch steel plate to prevent wear and facilitate motion.

Where the runway is long and heavy, piles should be driven on each side and connected with a header. By rigging a counter-weight and pulleys on each side the burden of the runway will be taken off the float, allowing it to remain level and move more easily in the sea.

Specifications and bill of material for each 10-foot section.

Stringers: 2-3 by 12-inch by 10-feet Y. P. or spruce halved and bolted at corners.
Ends: 2-3 by 12-inch by 12-foot same as stringers.
Beams: 6-2 by 8-inch by 12-foot Y. P. or spruce mortised and enoned into sringers 16-inches centers.
Braces: 4-2 by 6-inch by 8-feet Y. P. or spruce let in flush.
Bridging: 24 lin. feet, 1¼ by 3-inch spruce.



A club landing float designed by W. B. M. which is simply built at moderate cost

Flooring: 120-feet, 1¼ by 6-inch Y. P. or spruce.
Barrels: 4-52 gallons oil, paint or varnish.
Barrel Chocks: 8-3 by 12-inch by 3-feet Y. P. or spruce to saddle barrels.
Chock Braces: 8-1¼ by 6-inch by 3-feet Y. P. or spruce.
Chock Bands: 8-⅜ by 1½-inch galvanized wrought iron.
Bolts: 4-½ by 13-inch galvanized with washers, 16-½ by 20-inch galvanized with washers.
Lag Screws: 16-½ by 6-inch galvanized.
Nails: 6 lb. 12 d. galvanized cut or boat, 3 lb. 30 d. galvanized cut or boat.

W. B. M., Newburgh, N. Y.

Water Supply For Deck Washing

The Installation of a Pressure Water Service Fully Described--A Most Useful Accessory For the Cruiser

Answers to the Following Question Published in the August Issue

"Describe the installation of a hose for washing down decks on a small cruiser, water taken from outboard and pump either engine circulating pump or a separate one run from the engine"

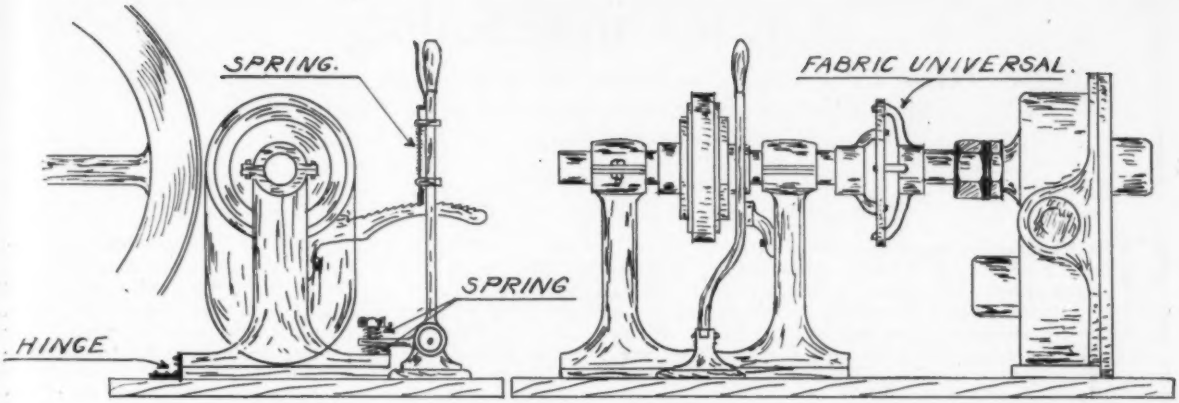
A Handy Pump

(The Prize Winning Answer)

THE sketch shows an installation used on a twenty-eight foot cruiser, both for washing down decks and for pumping the bilge, though fortunately it was never put to the last service. The engine was originally provided with a separate plunger pump for pumping the bilge but as this was operated from the cam shaft and the engine was a slow speed heavy duty type, it was decided to run the pump from the crank shaft and get more water through. So the pump was bolted to the end of a cabin transom, which happened to be in line with the flywheel and a removable connecting rod attached to the flywheel flange; this was only put in place when the pump was to be operated. Pieces of pipe two inches long were left projecting from the intake and discharge boxes of the pump and the suction and discharge hoses slipped over them when not in use.

The suction hose was made long enough to be pushed through one of the cockpit scuppers and extend down under water; this did away with the necessity for a separate seacock and water intake pipe. An ordinary brass garden hose nozzle was used on the end of the deck hose; both pieces of hose were half inch garden hose and when not in use were coiled up under the cockpit deck.

Another very efficient form of pump for deck washing purposes is of the centrifugal type. These are obtainable in small sizes with ¾ or 1-inch discharge openings. In order to operate these successfully it is necessary to turn them at high speed. This means, at the speed specified by the manufacturer. What might be termed a disadvantage of this particular form of pump is the fact that it is not self priming. This fault can be readily overcome by piping the engine discharge water into the priming tap on the pump. To operate, then requires only the opening of the shut-off cock in this line to divert the engine water to the pump, when it will quickly pick up its water and deliver a constant stream. Pumps of this type are generally made with a larger intake opening than the discharge opening. In order to secure sufficient velocity at the discharge nozzle the diameter of



FRICTION DRIVE PUMPING UNIT.
FOR BELT DRIVE SUBSTITUTE PULLEY AND OMIT LEVER.

A belt or friction drive pump is suggested by W. B. M. for a water supply system.

the pipe should be reduced at this point. By means of the ordinary rubber hose and nozzle this can be effectively accomplished and result in a powerful stream which is useful for many purposes on ship board.

H. H. P., Oakland, Cal.

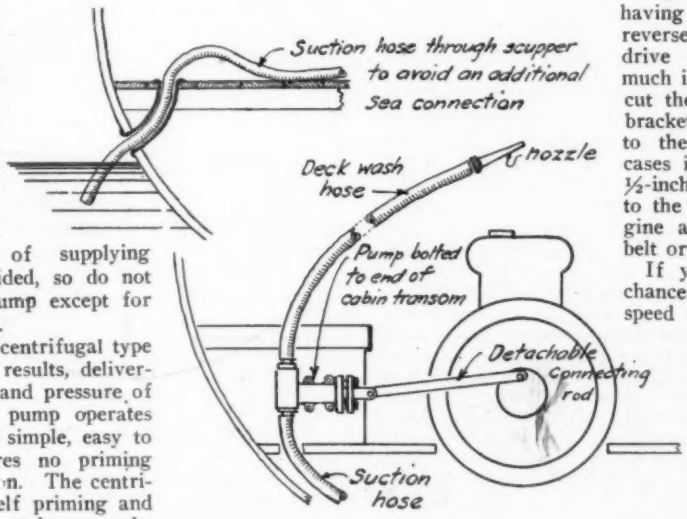
Water Pressure on the Deck

WASHING down the decks with a mop and a pail is a disagreeable job at its best, but when the mechanical element comes into play the job is a pleasure. The kids always want to squirt the hose and there is enough of the kid still left in the man so that he will enjoy washing down the decks with a hose.

The installation of a power pump for this purpose is simple, involves no great amount of labor or expense, and will not easily get out of order.

Employing the engine circulating pump for washing decks is not advised as the pump would have to work against a pressure considerably higher than when used for the purpose intended; and owing to the increased pressure would wear more rapidly. The driving mechanism would be subjected to a load greater than that for which designed, with a subsequent increase in wear and liability of failure. All machinery is designed with a certain factor of safety and will carry an overload for a reasonable length of time, but wear is always excessive and danger of failure, in some part, greater. In case of the failure of the circulating pump or any part of its drive the engine would have to be shut down, until a temporary method of supplying water could be provided, so do not use the circulating pump except for the purpose intended.

Either the geared or centrifugal type pump will give good results, delivering sufficient volume and pressure of water The geared pump operates well at any speed, is simple, easy to maintain, and requires no priming when in good condition. The centrifugal pump is not self priming and becomes inoperative at low speeds. However, the pump will very likely be located below the water line which overcomes the main objection of this type.


Suction hose through scupper to avoid an additional Sea connection
Deck wash hose
Nozzle
Pump bolted to end of cabin transom
Detachable Connecting rod
Suction hose

Arrangement by H. H. P. for supplying deck washing water.

A one inch discharge will be satisfactory for most any boat and on some the ¾-inch size will answer. It is better to have the pump too large than too small as the power to drive it is not a factor.

As the pump is to be used only occasionally a positive drive is not necessary and a choice of either friction or belt drive is offered. The friction drive is preferable owing to ease and safety of stopping and starting. A faced friction wheel 6-inches in diameter by 1-inch face will carry the pump easily. The friction wheel is made by bolting up the leather, fibre, or friction paper discs with five inch plates on each side between standard shaft flanges and turning true.

The friction is keyed to the shaft or held by spotted set screws and the shaft supported by bearings each side of the wheel. The connection to the pump shaft is best made a small universal joint in order to lessen wear on the pump bearings. The friction wheel is held against the fly wheel by a spring and screw or lever and quadrant.

The pump and its drive should be assembled on a base in such positions that when operating the pump shaft and the friction wheel shaft are in alignment and also parallel to the motor shaft.

Belting to the fly wheel is easy but there is an element of danger in handling the belt unless the motor is stopped

On some of the new motors having an inclosed fly wheel and reverse gear the friction or belt drive will be impractical, and much ingenuity will be required to cut the fly wheel housing, attach brackets and rig a drive similar to the starter drive. In some cases it may be possible to fit a ½-inch grooved pulley or sprocket to the connection between the engine and gear and use a round belt or chain drive.

If you are willing to take a chance and also double the idling speed while pumping, a grooved pulley or sprocket and jaw clutch may be attached to the circulating pump shaft; but remember, the pump must discharge against pressure and there will be a good load on it.

Where there is ample storage battery capacity an electrically driven pumping unit is unsurpassed.

W. B. M. Newburgh, N. Y.

Great Circle Sailing

The Use of Great Circle Charts — Finding the Great Circle Course and Distance — The Eighth Lesson of A Correspondence Course Which Will Be A Complete Treatise on the Subject of Dead Reckoning

by Dean Potter

Chairman, Committee on Instruction, United States Power Squadrons, Inc.

GREAT circle sailing is the method of sailing in which the arc of a great circle is employed for the track of the vessel. (Bowditch, § 183.) Like the sailings previously studied, it may be worked graphically, by special charts; or by inspection, using special tables; or by computation. Before taking up these several methods in detail, let us discuss some general considerations, applicable equally to all of them.

Utility. The advantage of employing the great circle track is one of economy. The great circle is the shortest route. As explained in the first lesson, the shortest distance between any two places on the earth's surface, lies along the arc of the great circle which joins them. The great circle track is straight, while the rhumb track is curved, and hence longer.

We cannot say that great circle sailing is a recent invention. It has long been known, and was commended by Capt. Davis as far back as the sixteenth century (Norrie's Epitome.) But we dare say that it was not until comparatively modern times that average navigators appreciated its utility and essayed freely to practice it. In the old days, they lacked special charts and tables to facilitate the work, and the computation methods were tedious and, in a measure, difficult. But the great stumbling block, no doubt,

Fig. 29: The great circle, represented by the solid curve, is approximately followed by dividing it into a number of parts, and by sailing rhumb courses nearly coinciding with each. The dot and dash line represents the rhumb course between the places of departure and destination. The lines are drawn as they would appear on a Mercator chart

after navigators had become used to the Mercator projection was that on the Mercator chart *the great circle track was a curved line.* It was difficult for those men to believe that a curved line on their charts actually represented a shorter distance on the earth than a straight line. They were accustomed to draw a straight line to represent the track they sailed, and to measure the distance by stepping off with a pair of dividers. Plainly, if they drew a curved line, connecting the same points, it would be longer, and, as they supposed, they would have to step off a greater distance. Could it be that this curved line, longer on the chart, actually represented a shorter distance on earth? The proposition seemed absurd, and no doubt they thought the whole scheme was a lot of new-fangled nonsense.

It may be that this allusion to the quandary of the ancient mariners, may create unrest in the minds of some modern ones! But do not forthwith resolve to throw out your Mercator charts as altogether undependable! If you drew a fancy curve on your Mercator through Long Island Sound, it would be longer and measure longer than a straight line. But it would not represent a great circle track. Indeed, the curve of so short a track would be so slight, that it would be hard, in plotting, to differentiate the great circle from a rhumb. But if you took an ocean chart on Mercator's projection, and laid off a rhumb and great circle track from Cape Hatteras to Cape St. Vincent, do not be too sure that the latter would measure longer. It might be longer in inches, but not on the chart scale. The great circle would pass well north of the rhumb line; and the further north it went, the larger the scale would become, and the fewer would be the number of miles represented by a line of given length. If you could keep to the scale, and measure accurately enough, you would step off fewer miles on the great circle curve than on the shorter but more southerly rhumb.

Perhaps the best way to become convinced as to the comparative shortness of the great circle, if, indeed, proof is necessary, is to experiment a little with a piece of thread and an ordinary terrestrial globe. The thread drawn tight between two points will represent a straight-line-great circle track. It will be seen to cross meridians at differing angles. By using pins, the thread may be held in a curved-line-rhumb track, obviously longer.

We do not wish to make extravagant claims for the great circle. On short voyages, the difference between it and the rhumb track would be quite negligible. In sailings nearly north or south, that is, nearly along a meridian, or in sailings nearly along the equator, the great circle and rhumb tracks would practically coincide, and it might not be worth while to bother with great circle methods.

But on long voyages, with marked differences of longitude, and especially away from the region of the equator the great circle track might represent a considerable saving of distance. For instance, the great circle from Hatteras to Cape St. Vincent, mentioned above, is shorter than the rhumb by over 60 miles. This saving might give the ocean

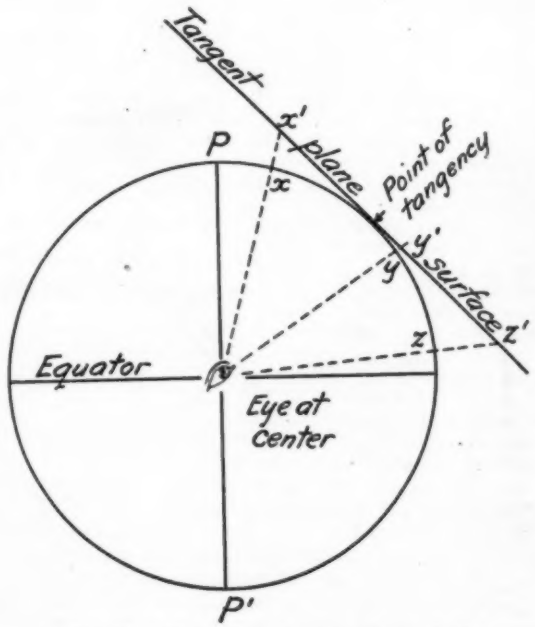


Fig. 30: Illustrating the gnomonic projection

record to a greyhound, or gain several hours for a tramp. It might mean a whole day gained in docking, and avoid an unpleasant night outside.

It is often supposed that great circle methods are chiefly useful for steamers, which, largely independent of winds, may choose any course desired. On the contrary, they might be of great value to sailing craft, particularly if the course lie to windward. Suppose a rhumb course of E by

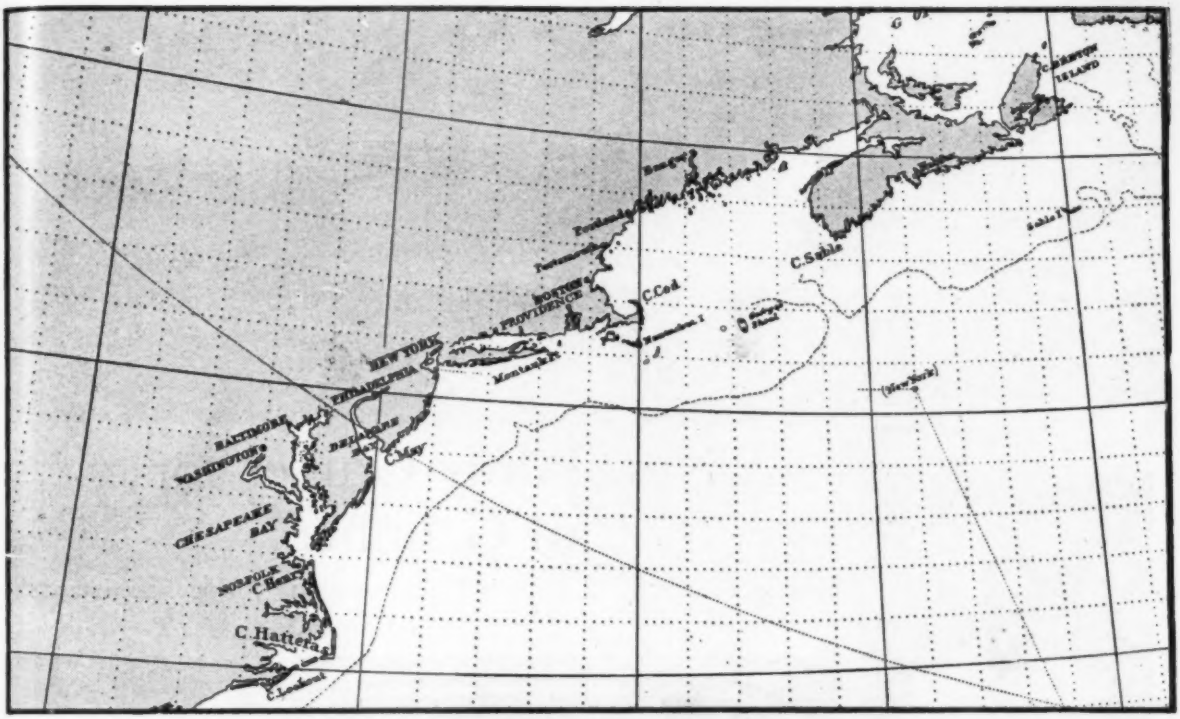


Fig. 31: *A portion of the great circle chart of the North Atlantic*

N with the wind dead ahead. Now a navigator, unfamiliar with great circle sailing, might suppose that it made no difference whether he stood on the starboard or port tack. Suppose he chose the latter, and with a vessel which would sail say six points off the wind, made good a course of SE by S. Now suppose the great circle course were NE. By taking the port tack, he would be sailing nine points from the great circle or direct route, and be actually going farther and farther away from his port of destination. If, however, he had chosen the starboard tack, he could have made good a course of say N by E, or within three points of the great circle course, and would be making a substantial gain toward his destination.

Lecky borrows a striking illustration from Capt. Bergen, and while we do not wish to unduly expand our consideration of the subject, the quotation is too good to pass by:

"Given the ship, off Flinders Island, Bass Strait, in lat. 40° 0′ S., long. 148° 30′ E. bound to Callao, in lat. 12° 4′ S, long. 77° 14′ W. It is required to compare the Great Circle and Mercator tracks.

To Compare the Courses

"The Mercator course is E by N¼N, and the first Great Circle course is SE½E; the difference, therefore, 4¼ points. Suppose the wind to come from E by N¼N, that is, right ahead by the Mercator track. To a person ignorant of Great Circle sailing, it would appear a matter of indifference, so far as the wind was concerned, on which tack the vessel was put. Suppose one vessel to be put on the starboard tack, and that she could make a course good six points from the wind. Then her course made good would be N¾E, which differs from the Great Circle course 10¾ points, and the vessel would lose 50 miles in the first 100 sailed.

"Suppose another vessel to be put upon the port tack. Then her course made good would be SE¾S, that is, within 1¼ points of the first Great Circle course, and she would gain 97 miles in the first 100 sailed.

"The two ships sail each 100 miles, and one is 50 miles further from her port than when she started; the other is 97 miles nearer than when she started; thus, in this case, making a difference of 147 miles in less than one day's sail in favor of Great Circle sailing.

"Again, suppose the wind to come strong, say half a gale, from the N¾E. Then the vessel on the Mercator track would lie her course, but she would be close-hauled, and it would be necessary to reduce sail in order to ease the vessel, so that she would be forging ahead at the rate of from 1 to 3 miles an hour, and at the same time making from 2 to 4 points leeway; but the vessel on the Great Circle track would have the wind on the quarter, she would carry double-reefed topsails, mainsail, and jib, and would be going at the rate of from 6 to 8 miles an hour.

"Again, suppose the wind to increase to a heavy gale from the North, and cause a high sea. Then the ship may run South until the fury of the gale is spent, and she will at the same time gain 63 miles in the first 100 sailed.*****

To Compare the Distances

"The distance by the Mercator track is 7,321 miles, and that by Great Circle is 6,772 miles which therefore is shorter than the Mercator by 549 miles, and it therefore should be adopted, if polar regions, land, shoals, winds, and currents will allow."

In the case of sailing vessels, to be sure, unfair winds may make it impossible to closely follow the great circle track. But the mariner should choose his tacks so as to keep as near as possible to the general great circle direction.

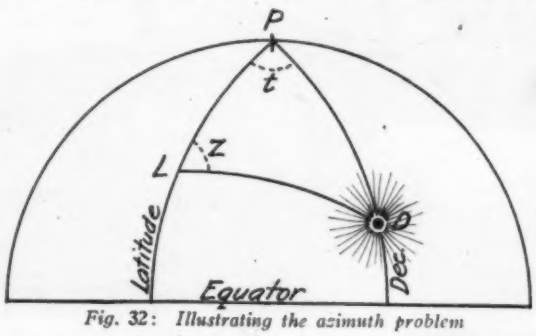
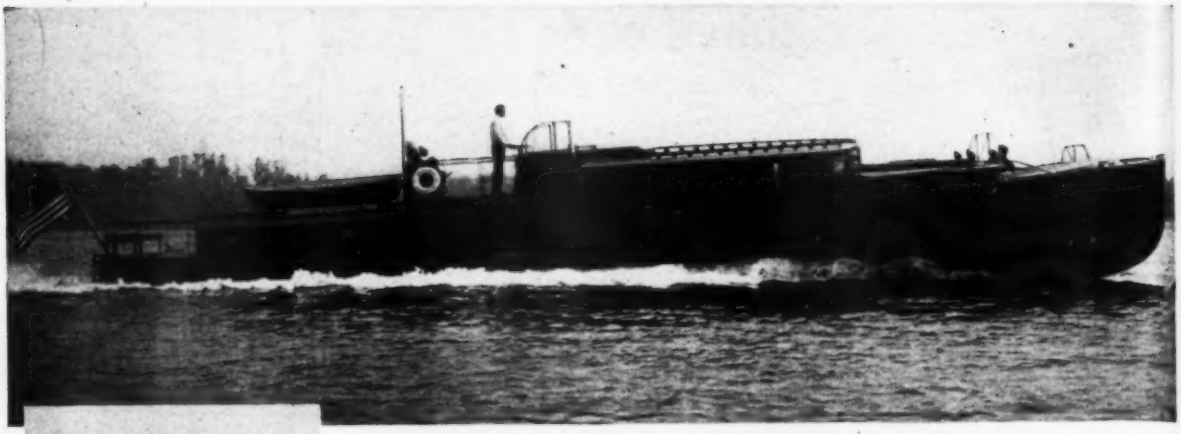


Fig. 32: *Illustrating the azimuth problem*

Methods of Sailing: It has been stated that the great circle course crosses the meridians at a constantly changing angle. Now, no quartermaster could steer a constantly

(*Continued on page* 102)

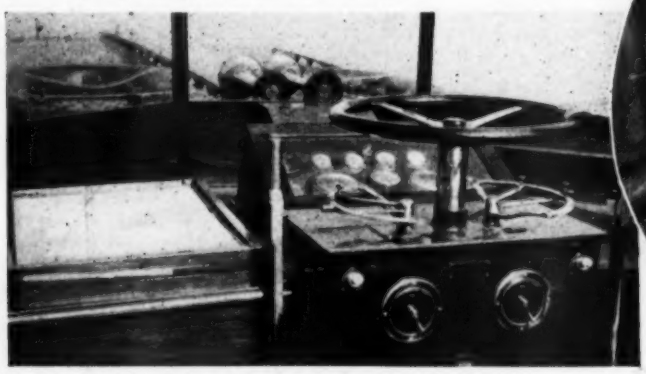


A New Purdy Cruiser for Carl G. Fisher

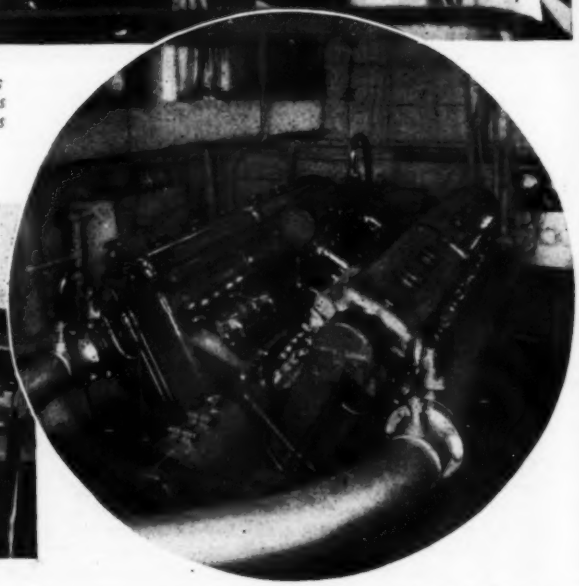
Shadow F, A 72 Foot Express Cruiser with a 35 Mile Speed at Sea

A horizontal steering wheel gives absolute control at all times besides ease and comfort. The man at the wheel is C. N. Gilman, Vice president and General Manager of the Allison Engine Co., the man chiefly responsible for the development of this wonderful engine

The commodious forward cockpit is one of the features of Shadow F



A view of the instrument board and chart case



One of the two 12 cylinder Allison motors installed in Shadow F.

A Speedy 30-Footer

Every Summer Home Will Soon Consider A Fast Pleasure Craft Necessary To Its Appointments

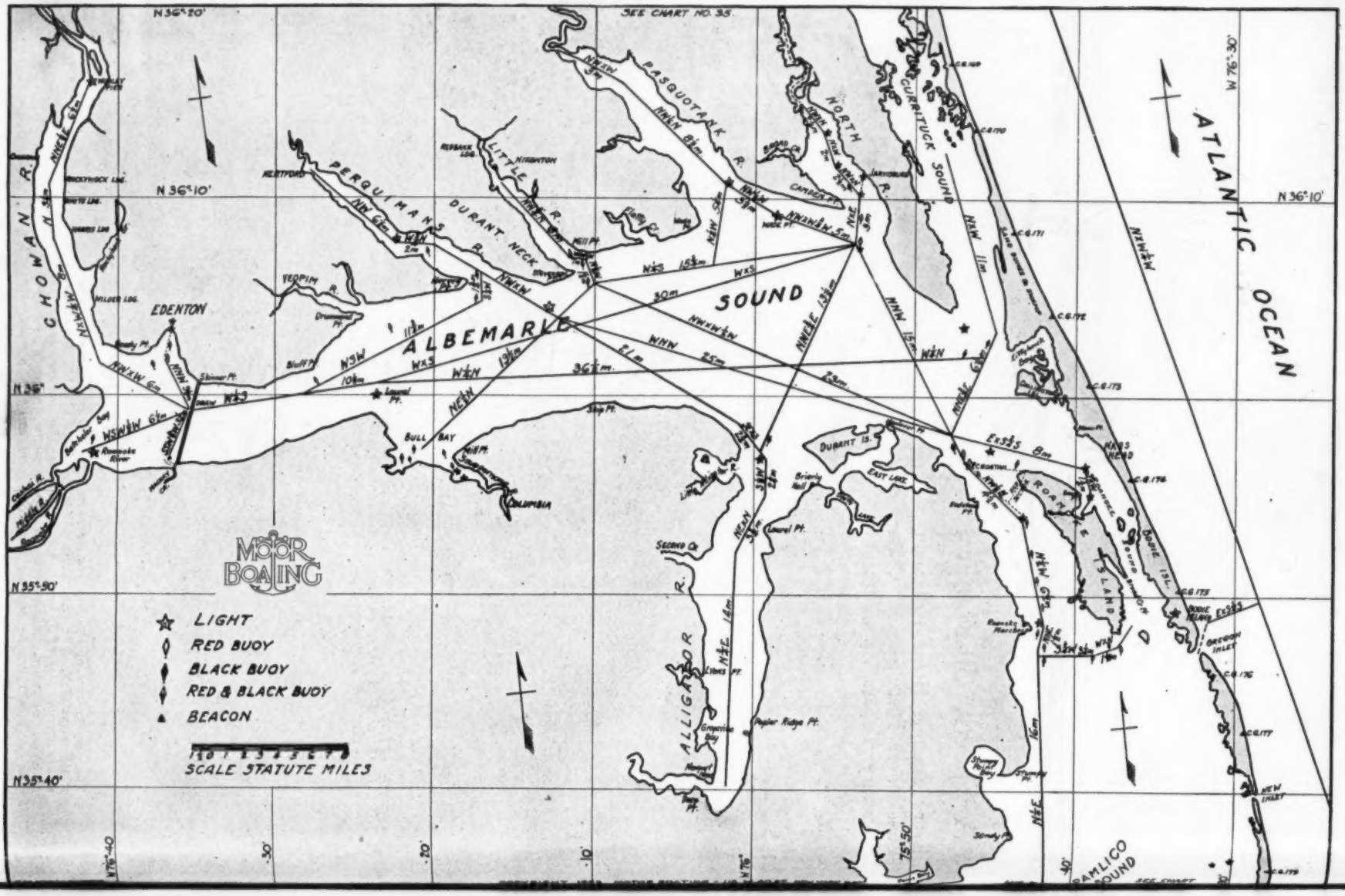
Among the outstanding characteristics of the new 30 foot runabout developed by the Great Lakes Boat Building Corporation of Milwaukee, can be mentioned the high freeboard, double planked bottom, batten seam sides, and ample accommodations for a party of eight in the forward and after cockpits

While not designed particularly as a speed boat it is capable of better than 40 miles an hour and is a gentleman's runabout in every respect. It is delivered completely equipped and ready to operate. The construction is staunch and durable. Sawn frames are spaced 45 inches on centers with steam bent frames on 6½ inch centers between. Planking throughout is mahogany with natural finish

The performance of the boat centers around the 300 horse-power engine which is installed. The remarkable power developed at 1,600 revolutions makes possible a speed of better than 40 miles an hour and insures smooth continuous operation. All controls are carried to the helmsman's position for one man operation and the boat handles as easily as a motor car

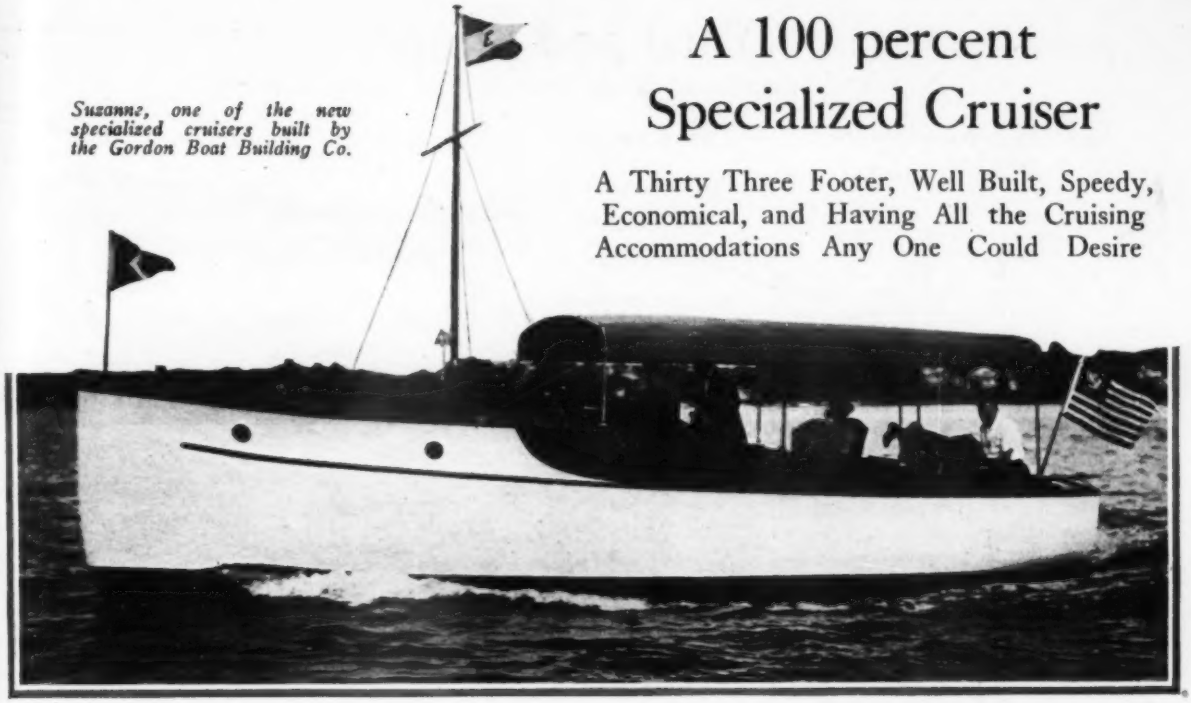
Motor Boatmen's Chart No.36 -- Albemarle Sound, North Carolina

For Use In Connection With Coast and Geodetic Survey Charts Nos. 1228, 1229



A 100 percent Specialized Cruiser

A Thirty Three Footer, Well Built, Speedy, Economical, and Having All the Cruising Accommodations Any One Could Desire



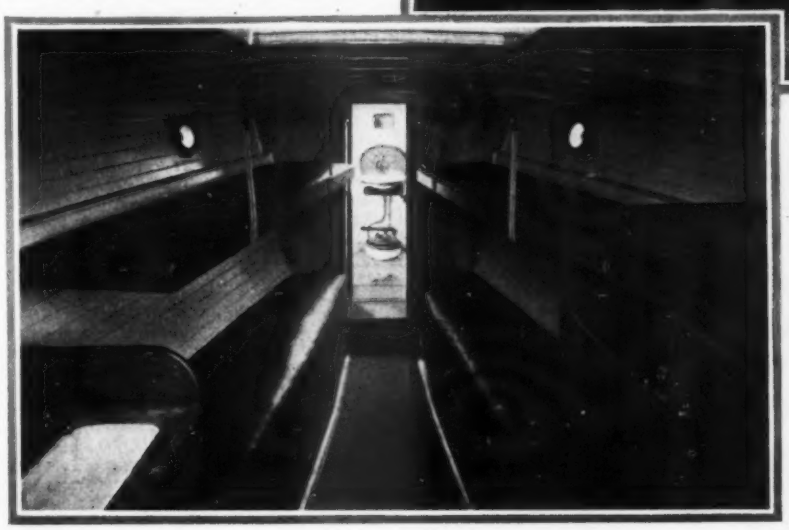
Suzanne, one of the new specialized cruisers built by the Gordon Boat Building Co.

THE Gordon Boat Building Company of Brooklyn, N. Y. have recently placed upon the market a cruiser, the first one of which is illustrated on this page, which seems to us to be an admirable solution of stock cruiser problem. Surely the length chosen, 33 feet, is a proper one and the other dimensions and specifications are equally well balanced.

The personnel of the Gordon Boat Building Company are by no means new at boat building, having been long connected with that trade. They therefore know boats and how to build them from the keel up.

The new Gordon cruiser is powered with a twenty horse-power Kermath.

A view of the cabin interior looking aft showing the compact installation of the Kermatith 20 h. p. power plant



Looking forward in the cabin as it looks with the upper berths in place, ample sleeping accommodations are afforded for four persons with the use of these berths

Yard and Shop

Notes of Interest to Both Owner and Manufacturer

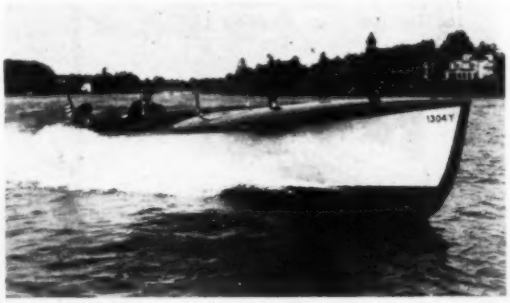
Safe Harbors On the Way South

SMALL motor craft on their way to Florida when crossing Albermarle and Pamlico Sounds are often at a loss where to lay up for a comfortable night. One of our good friends Elmer C. Leone of Beaufort, N. C. has written us and told us of a few little harbors which he has located and which fellow voyagers can find with little effort. The Inside Route Pilot quotes Munden as an anchorage. If the night should be quiet this will be alright and one can tie up to a dilapidated pier abandoned by the Norfolk Railroad. It might be better to run on to the canal if one has the time as Coanjock is a very fine harbor for the night.

Further down Roanoke marshes can be located by two buoys which can be used as ranges. By their aid one can enter on the north side of the little island and follow a narrow channel that leads to a pier and several huts. This place is uninhabited except during the fishing season but the channel is eight foot clear and quiet. The next good harbor is entered through Wyesocking Bay. Just now there is a dredge on the bank near the canal entrance which is almost entirely invisible. The only guide is a double row of stakes in two groups about forty feet apart. The channel is between these and eight feet deep. As you pass these stakes which are about 2½ feet above water there is a sharp turn to port and you get the impression that you are running head on into the bank. Keep in the main channel following the dredged bank to the little town of Neraska. Ice, provisions and gas can be obtained and it is probable that beacons will be erected to facilitate the entrance into the canal as Wyesocking Bay is too large to afford comfortable anchorage for a small boat. Further along in Swan Quarter Bay the town of Swan Quarter is reached by an eight foot canal which has a red slatted pile beacon with a light at the entrance. The bay is marked by ranges and buoys which must be followed on the proper side or trouble will ensue, as they mark the channels.

The Cruiser Championship

In the September issue in the account of the Cruiser Championship Race, the winner Diana was mentioned as sailing under the colors of the Philadelphia Corinthian Yacht Club. The rating certificate from which data was taken carried this information but we have since learned that Diana actually sailed under the colors of the Philadelphia Yacht Club.



Swiftwater, a Thousand Island's runabout is equipped with a four cylinder Hall-Scott motor with which it is able to do 27 miles per hour. It is owned by H. S. Lewis of Alexandria Bay

Scripps Motor Reports

In accounts of boat races reaching our offices about this time the performance of Scripps motors stands out conspicuously. In the report of the New York Motor Boat Club's race to Newburgh and return, not long ago, a 50-foot cruiser, Dede, belonging to H. C. Granneman of the Gravesend Bay Yacht Club won both the time prize and the corrected time prize in the cruiser class. She is equipped with a model D6 Scripps motor and her performance is remarkable, in view of the fact that the boat is an exceptionally heavy craft. In the same race in the express cruiser class, Dixie, a little 26-foot boat also equipped with a Scripps motor was successful in winning first place.

As the meet of the Allied Yacht and Boat Clubs of Graveland Bay, where one of the largest fleets gathered for the days racing, this same little boat owned by T. J. Parkman, was again successful in winning the express cruiser class, while Dede also won the cruiser class. Third place in this race was won by the cruiser Spartan, also equipped with a Scripps motor.

Far off on the west coast the Tacoma Yacht Club conducted a long distance race from Tacoma to Brentwood, a distancce of 160 nautical miles. Lady May, a 52-foot cruiser with a medium duty Scripps motor won this race. Her owner W. L. Dulmage of the Seattle Yacht Club, reports that the engine ran the entire distance at the same rate of revolutions without a miss.

The 28-foot sloop which is used in the British West Indies for carrying mail between Charlestown and St. Kitts. A 20 horse Kermath motor helps her to maintain her average of 500 miles per month

A Popular Sport

Racing of boats equipped with outboard motors is becoming more popular all the time.

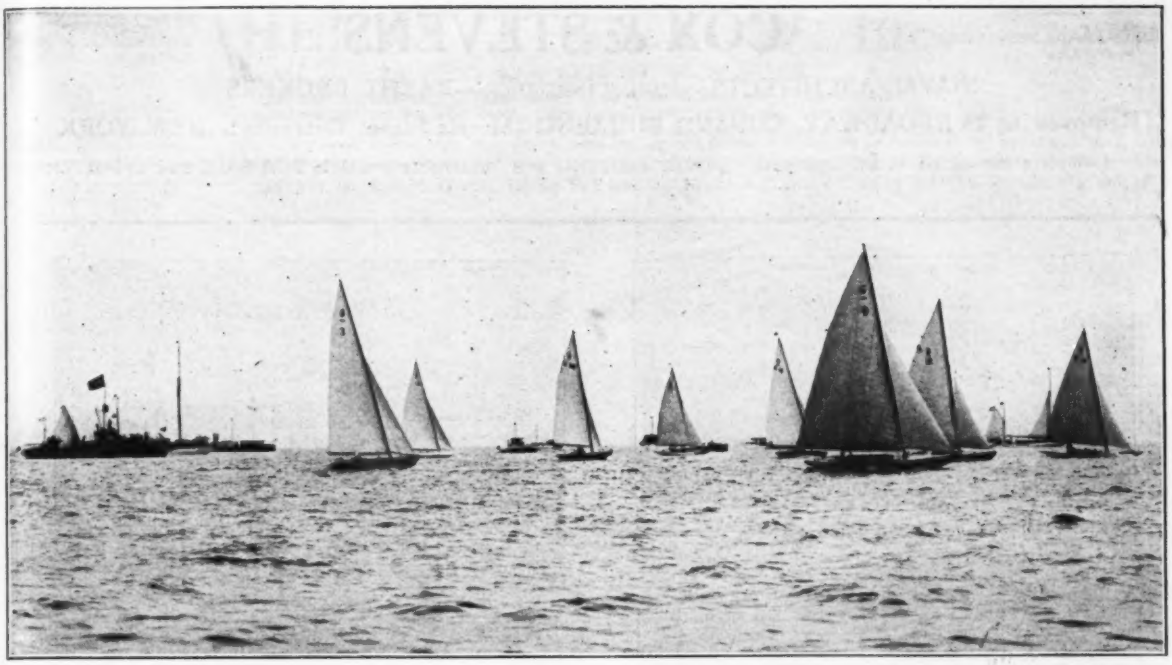
Reports are continually received by the Elto Outboard Motor Company from users of its engines of their success in races, in which they have competed. A race in Houston, Texas, was won by an Elto equipped boat over a 14 mile course. This was the third race of its kind this season, and in all of these the Elto motor has been the winner. From Seattle, Washington also comes the report that a three horsepower Elto motor won an International outboard motor boat race there against twenty competitors.

A race for outboard motor equipped boats on Okauchee Lake was won by this little boat equipped with a single cylinder Evinrude. A silver trophy, as well as a prize of a 1922 Evinrude was presented to Mr. Hildebrandt its owner

Where Do They All Go?

Recent production record of 5,232,051 Quality piston rings during two consecutive working months is an index of the volume of replacements being made in the automotive field. Although the Piston Ring Company plant at Muskegon, Mich., is said to be the largest exclusive piston ring factory in the world with a capacity of 12,000 rings per hour, there is every reason to believe that further expansion will soon be necessary to keep abreast of the ever increasing demand for Quality piston rings.

(*Continued on page 57*)



Start of the first day's race on September 9th, in which the American boats took all of the first four places. Photo © by Morris Rosenfeld, N. Y.

Challengers and Challenged— Everyone Valsparred!

What a line-up! England's best—Jean, Coila III, Reg and Caryl; America's best—Lea, Clytie, L'Esprit and Grebe—all ready for the start of the International 6-meter Race!

This year's contest writes a new chapter in the log of British-American yachting annals, and in the history of Valspar. For *every one* of these superlatively fine boats is Valsparred!

The significance of this fact cannot be denied. Today yachtsmen the world over recognize that for all-round marine use, Valspar is the varnish without a peer. Unharmed by wave or weather, always lustrous, unspotted and undulled—it is known everywhere as the one waterproof varnish that never turns white.

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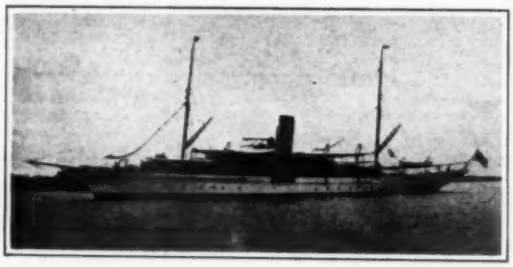
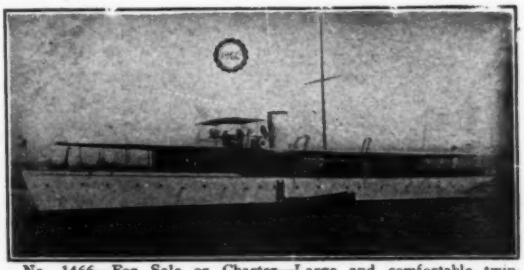
Removed to 25 BROADWAY, CUNARD BUILDING (Morris Street Entrance), NEW YORK

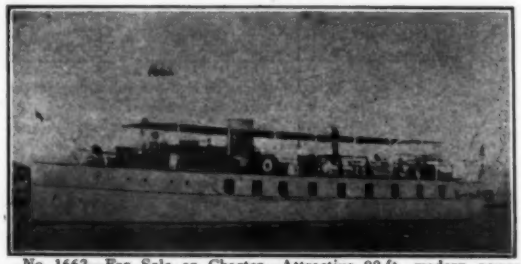
Complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request.



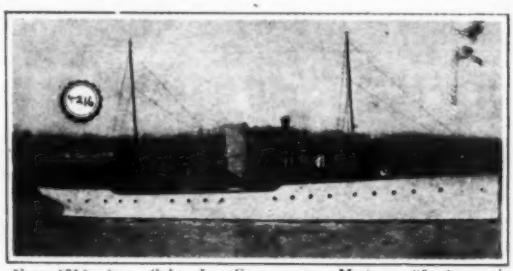
No. 341—For Sale or Charter—Large, sea-going steam yacht. Palatial accommodation. Unusual opportunity. Several similar and smaller available craft. Cox & Stevens, 25 Broadway, New York.



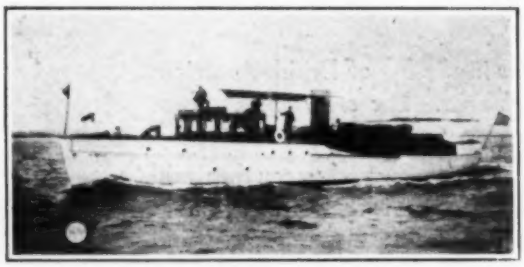
No. 1466—For Sale or Charter—Large and comfortable twin-screw steel cruiser power yacht. Speed up to 17 miles. Dining saloon and social hall on deck; 3 double and 1 single staterooms, 3 bathrooms, etc. Handsomely fitted owner's quarters. Modern plumbing. Cox & Stevens, 25 Broadway, New York.



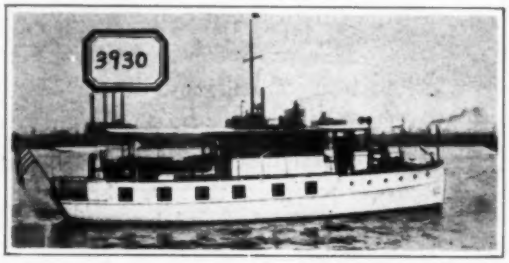
No 1662—For Sale or Charter—Attractive 90-ft. modern power houseboat. All the comforts of a country home. Large saloon, four staterooms, two bathrooms, handsomely furnished. Cox & Stevens, 25 Broadway, New York.



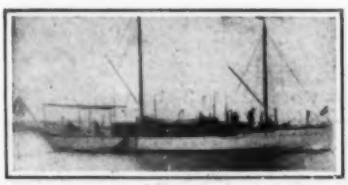
No. 4216—For Sale—In Commission—Modern 95 ft. twin screw motor yacht. Speed 12-14 miles. All conveniences. Deck dining and main saloons; four staterooms. Large deck space. Cox & Stevens, 25 Broadway, New York.



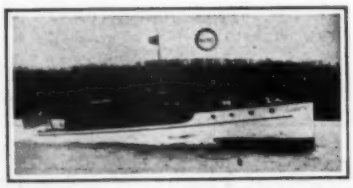
No. 1674—For Sale—Exceptionally attractive 84 ft. cruising power yacht. Speed up to 14 miles; 125 H.P. Standard motor. Dining saloon in deckhouse forward; two double and one single staterooms, bath and toilet room aft. Bargain for quick sale. Cox & Stevens, 25 Broadway, New York.



No. 3930—For Sale—Recently built motor houseboat; 61 x 16 x 3 ft. In commission. Speed 10 miles; 6 cyl. Standard motor. Large deck saloon, three staterooms, bathroom, etc. Excellent opportunity. Cox & Stevens, 25 Broadway, New York.



No. 353—Unusual bargain; 70 ft. cruising power yacht. Standard motor. Larke saloon, double and single stateroom, bath and toilet room. Very able craft. In good condition. Price from Cox & Stevens, 25 Broadway, New York.



No. 4050—For Sale—High class fast 52 ft. twin-screw enclosed bridge deck cruiser. Speed up to 30 miles; two cyl. 200 H.P. Speedway motors. Double stateroom, saloon with two pullman berths, toilet room, galley, etc. In commission. Cox & Stevens, 25 Broadway, New York.

N. 3944—For Sale or Charter—Practically new, twin screw 60 ft. bridge deck cruiser. Best craft of type and size available. Saloon, double stateroom, bathroom, etc. In Commission. Cox & Stevens, 25 Broadway, New York.

PLANS, PHOTOGRAPHS AND PRICES ON REQUEST.

Advertising Index will be found on page 122

NAVAL ARCHITECTS
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YACHT BROKERS
MARINE INSURANCE

HENRY J. GIELOW, Inc.

25 WEST 43rd STREET, NEW YORK

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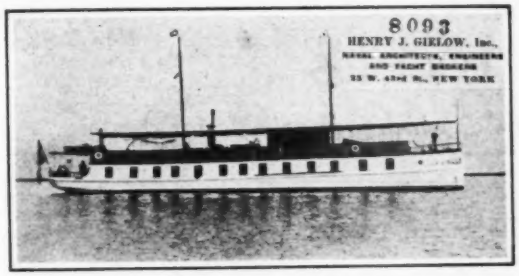
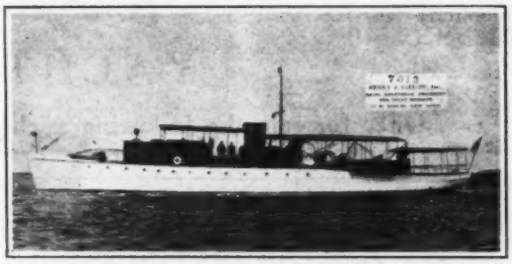
Cable Address:
Crogie, New York
A.B.C. Code

Plans and specifications for new yachts of any size or type should be prepared now to assure delivery for next year. Have plans of new yachts, all types, on file now.

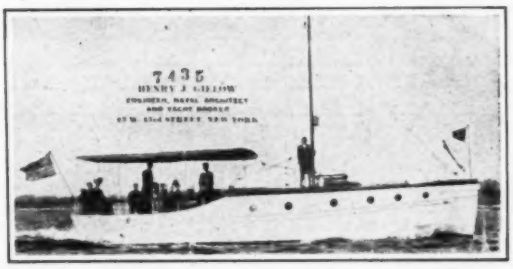
We have a most complete and up-to-date list of steam and motor yachts of all sizes, sail, auxiliary, and houseboats, on file in our office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat, upon request.



No. 8093—For Sale or Charter—Desirable 95 ft. twin screw power houseboat. Standard motors. Large saloon, three double staterooms, two bathrooms, and deck lounging saloon. Suitable for Northern and Southern cruising. Now in full commission. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

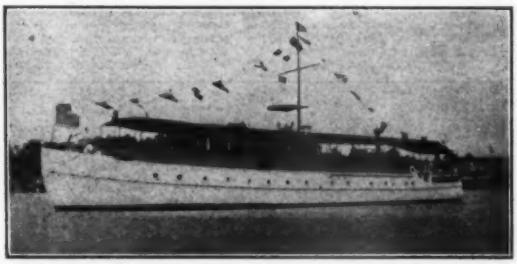


No. 7013.—For Sale—Opportunity to buy twin-screw Diesel motor yacht reasonable. Delivery Sept. 1. 110 x 18 x 6 ft. 6 in. Copper sheathed. 3 large, airy staterooms, each with separate toilet room, one bath. Completely found, electric fans and fully screened. Able sea boat has twice cruised West Indies. Fuel cost sixty cents per hour at 10 knots. All overhauled 1922. H. J. Gielow, Inc., 25 West 43rd St., New York City.



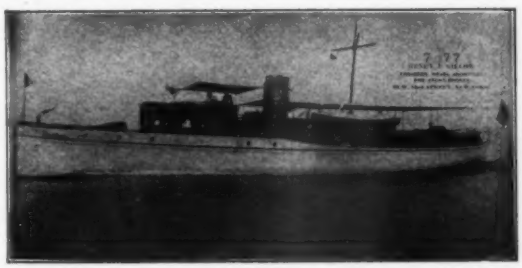
No. 7435—For Sale—Very attractive raised deck cruiser, 40 ft. x 10 ft. x 3 ft. 6 in. Speed 10 miles. 20th Century motor. Double stateroom, large saloon, galley, toilet room, etc. All in first class condition. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

No. 7002—For Sale or Charter—Finest yacht of type available. 138 ft. twin-screw power yacht. Two 300 H.P. Standard engines. Dining room and social hall on deck; three double and one single staterooms; two bathrooms. All furnishings new 1920. Henry J Gielow, Inc., 25 W. 43rd St., New York City.

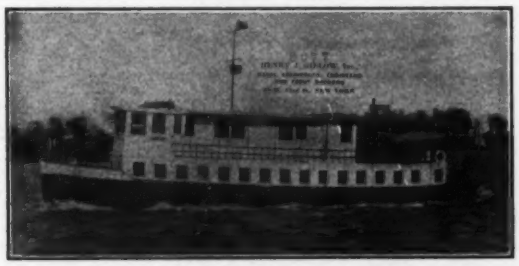


No. 8067—For Sale or Charter—Desirable twin-screw cruising houseboat suitable Florida and Northern waters. 88 ft. x 19 ft. x 3 ft. 6 in. 20th Century motors. Boat entirely overhauled and refitted 1920, three double and one single staterooms, saloon, deck saloon, sleep 8. Electric light and heating plants new 1920. Bath, two toilets. Has cruised Florida each year, good sea boat. Reasonable. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.

No. 8177—For Sale—New houseboat cruiser completed spring delivery. 48 ft. x 13 ft. 6 in. x 3 ft. One double, one single staterooms, large saloon with two berths and deck saloon 12 ft. x 8 ft., sleeps six. Crew stateroom forward. Heavy construction, finished mahogany and cream enameled. Delco lighting plant. 40-50 H.P. 20th Century engine. All best workmanship. Speed 9-10 miles. Popular type for Florida and Northern cruising. Price reasonable based on present reduced building cost. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.



No. 7077—For Sale—Particularly desirable 80-foot twin-screw power yacht. "20th Century" 50-60 H.P. motors, new 1919. Deck dining room, two double staterooms, bathroom. All furnishings and equipment new 1919. Excellent condition. Henry J. Gielow, Inc., 25 W. 43rd St. New York City.



No. 8077—For Sale—Desirable cruising houseboat all in fine condition. Thoroughly overhauled 1921. Inspectable New York. 75 ft. x 16 ft. x 3 ft. 6 in. Winton motor, 6 cylinder 70 H.P. Three large staterooms, large deck saloon; newly furnished, screened throughout. Heavily built, able sea boat. Speed 10-11 miles. Price attractive. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.

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52 Pine Street New York City

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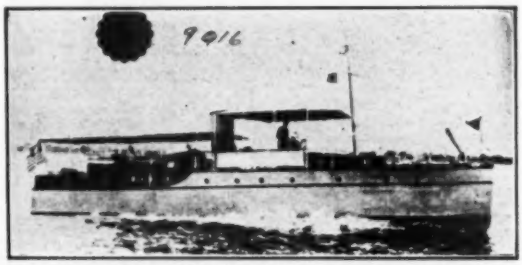
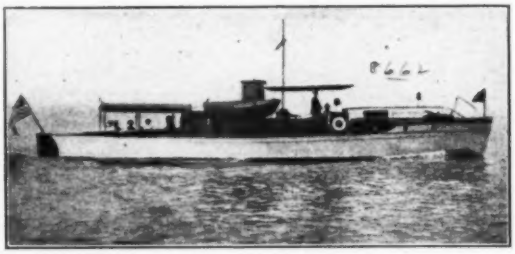
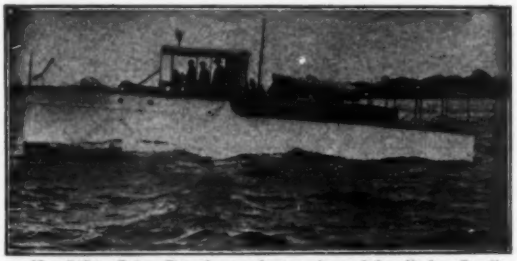


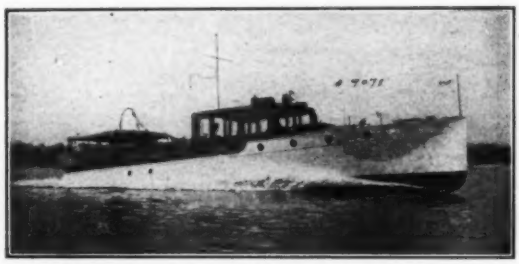
No. 9016—Sale—Charter—Desirable 60 ft. raised deck cruiser, thoroughly overhauled 1921. Two new 6 cylinder 90 H.P. Sterling motors.



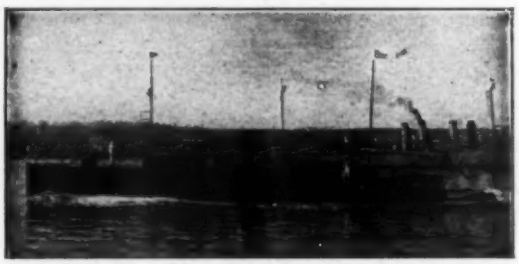
No. 8662—Price Reasonable. Twin Screw 60 ft. fast cruiser. 2 90 H.P. Sterling motors. Inspectable Maine waters.



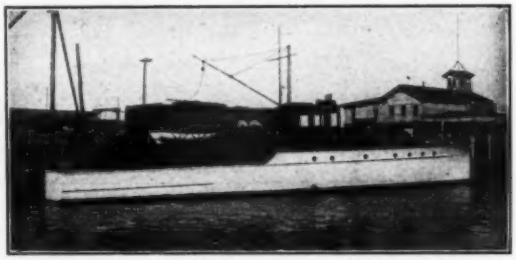
No. 7474—Sale—Brand new fast cruiser; 2-6 cylinder Sterling motors. Speed 21½ miles. All modern conveniences.



No. 9078—Sale or Charter—Fast 48 ft. express cruiser in commission. Immediate delivery—2 new 6 cylinder Van Blerck motors. Good accommodations. Thoroughly overhauled last year in all departments.

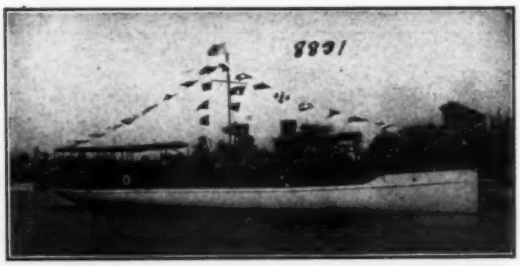


No. 8102—Sale—Charter—Most desirable raised deck cruiser available. Practically new. 81 ft. x 13 ft. x 5 ft. draft. Speed 15 miles. Electric light, hot water, heat and refrigerating plant.



No. 9075—For Sale—Desirable raised deck cruiser 70 ft. x 11 ft. x 4 ft. Good accommodations. Speed 23 miles.

No. 8978—For Sale—Raised deck semi-day cruiser. 200 H.P. Sterling motor. Speed 20 miles per hour. In the very best of condition. Price reasonable. Full particulars and plans from Tams & King, 52 Pine Street, New York.



No. 8831—Exceptionally fast cruiser; 74 ft. x 10 ft. 6 in. x 3 ft. 6 in. draft. New 300 H.P. 1920 6 cylinder Sterling motor; speed 25-29 miles. Good owner's accommodations. Further particulars from Tams & King, 52 Pine St., New York.

Advertising Index will be found on page 122

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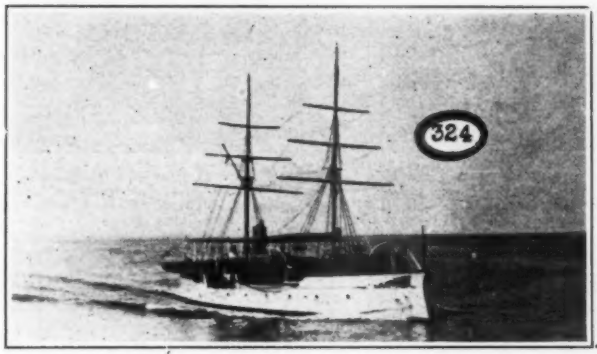
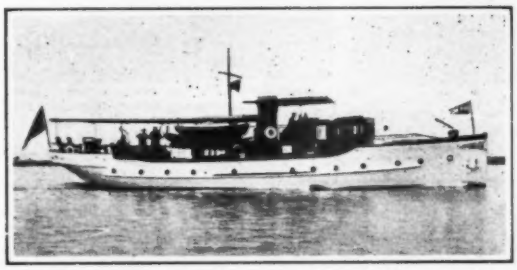
TELEPHONE STATE 6495

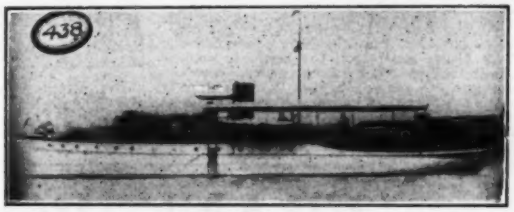
We have a complete list of all steam and power yachts, auxiliaries, and houseboats, which are for SALE and CHARTER. Plans, photographs and full particulars furnished on request.



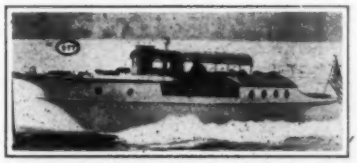
No. 324—For Sale—68 ft. cruising power yacht. Brigantine rigged 13 ft. 6 in. beam, 5 ft. draft. Two double staterooms, comodious dining saloon. 8 cylinder Sterling motor. Cruising speed 13 miles. Independent electric plant. Has received exceptionally good care and is in excellent condition. Now on Great Lakes and in commission ready for cruise. Very attractive price for immediate sale. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



No. 560—For Sale or Charter—75 ft. x 14 ft. x 4 ft. 6 in. gasoline cruiser built 1915. Sterling powered. Very able seaboat, excellent accomodations below and on deck. Has deck dining saloon, two large staterooms, large main saloon and bathroom. Located Great Lakes. Reasonable price. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.

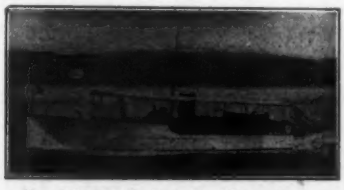


No. 438—For Sale—At a very attractive price. Twin screw cruiser 90 ft. x 15 ft. x 5 ft. heavily built of best materials and construction. Equipped with two heavy duty 20th Century motors. Deck dining salcon, very large deck space. Has two double and two single staterooms in owner's quarters, bath and two toilets. Very complete and the best of equipments. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.

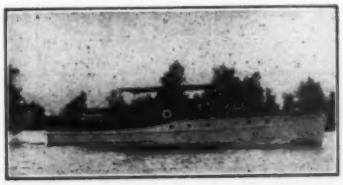


No. 977—For Sale—50 ft. Great Lakes Cruiser. Speed up to 20 miles. Accommodate 6 to 8. Excellent conditon throughout. New motor 1922. Reasonable price. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.

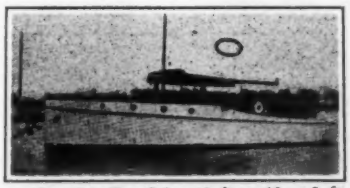
No. 83—For Sale—85 ft. twin-screw cruising yache. 16 ft. 7 in. beam, 3ft. 6 in. draft. Excellent for southern cruising. Three double,, one single stateroms, bath, also dining saloon on deck. Cruising speed 14 miles. Is in excellent condition and fully equiped with every modern convenience.



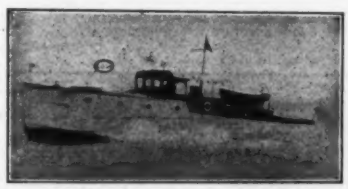
No. 1019—For Sale—60 ft. twin-screw express cruiser. Excellent seaboat. Speed up to 22 miles per hour. Accommodations excellent. Price reasonable. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



No. 173—For Sale—Very attractive bridge deck cruiser 55 ft. x 13 ft. x 4 ft. Powered with a 6 cylinder Sterling motor. Has large main saloon, forward double stateroom and bath in owner's quarters. Beautifulily finished in mahogany. In excellent condition. Reasonable price. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.



No. 106—For Sale—40 ft. x 10 x 2 ft. 10 in. power yacht. One double stateroom, dining saloon, galley, two toilets. Sleeps 6-8. Speedway self-starting motor. Low price. Excellent condition. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.



No. 1018—For Sale—54 ft. twin-screw excellent cruiser. Speed 20-25 miles per hour. Double stateroom and large main saloon. Two toilets and shower bath. Well equipped and in excellent condition. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.

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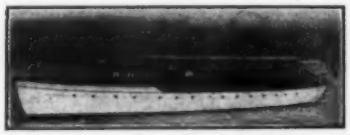
No. 2254—55 ft. bridge deck cruiser. Two double staterooms, main saloon, two toilet rooms. Two berths and toilet for crew. Sterling Motor. Speed 13-14 miles. Electric lights, etc. Splendid proposition.

No. 1664—Twin screw steel power yacht 110 ft. x 21 ft. x 4 ft. Five large staterooms, saloon, two bathrooms, etc. Two 125-150 H.P. Standard motors. Speed 12-14 miles. Located in Florida. Splendid proposition.

No. 4270—Keel Schooner; 105 ft. x 75 ft x 18 ft. 6 in. x 11 ft. 3 in. Designed and built by William Fife, Jr. Built of teak Hull coppered. Three double staterooms, main saloon, bath, etc. Splendid proposition. Excellent seaboat. Inspectable New York.



No. 2041—85 foot twin screw power yacht. Two double staterooms, two berths in main saloon. Two toilet rooms, galley, crew's quarters, etc. Two 65 H.P. 20th Century motors. Speed 14 miles. Electric lights, etc.

No. 2034—52 ft. express cruiser. Double stateroom, main cabin. Two toilet rooms, etc. 200 H.P. motor. Speed up to 24 miles

No. 2014—71 ft. twin screw express cruiser. One double and two single staterooms, saloon, etc. Speed 20-25 miles. Can be bought at an attractive figure.

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CUNARD BUILDING, 25 BROADWAY, NEW YORK

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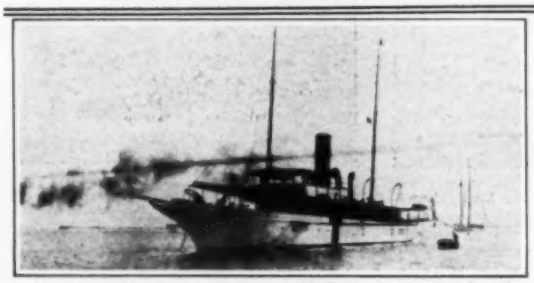
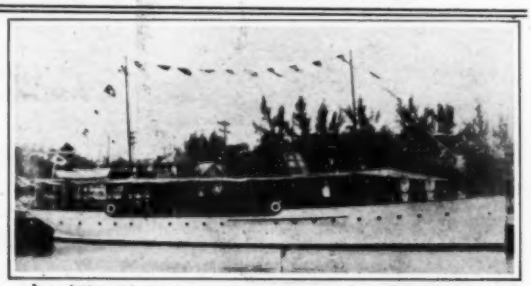
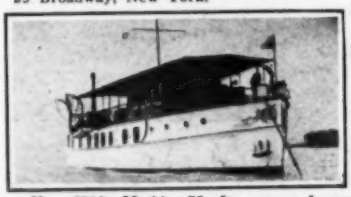
SALES AND CHARTERS—NAVAL ARCHITECTURE—MARINE INSURANCE



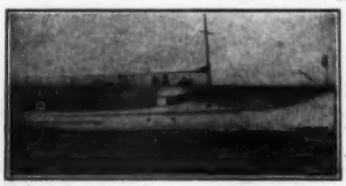
No. 5547—For Sale or Charter—170 ft. steel steam yacht. In excellent condition throughout. Dining saloon and social hall on deck. 6 staterooms, 2 baths. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.



No. 5048—93 ft. twin screw power yacht. Best design and build. Dining saloon and music room on deck. Owner's quarters and 3 staterooms. Bath. Price reasonable. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.



No. 6913—Mathis 75 ft. power house yacht. Deck dining saloon and 4 staterooms, baths, handsomely furnished. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.



No. 1175—57 ft. Elco Cruiser—2 double staterooms and saloon—6 cyl. Sterling motor, good as new. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

No. 6920—One of the Great Lakes 54 ft. twin screw express cruisers. Speed 23 miles. Immediate delivery in commission. Price attractive. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

Advertising Index will be found on page 122

WILLIAM GARDNER & CO.

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We have a complete list of Yachts of every description for sale and charter

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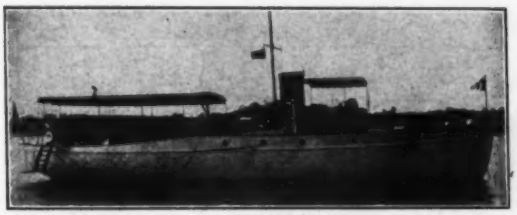
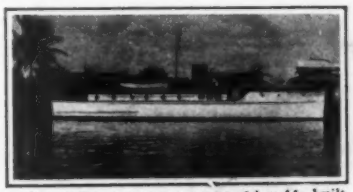
No. 2456—Excellent twin-screw power yacht, 72 ft. x 12.3; Lawley built, two 6 cylinder Wintons; speed 13 knots; two double staterooms, bathroom, dining saloon, etc.

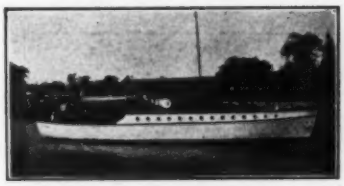


No. 1949—Able raised deck cruiser, 62 ft. x 12.9; new 8 cylinder Sterling motor; speed 13½ miles. Single and double stateroom, main saloon, etc. In first class condition.

No. 1973—Able cruiser, 56 ft. by 12 ft., new 6 cylinder Van Blerck motor, installed 1920; double stateroom, saloon, toilet room, etc. Price attractive.



No. 2000—Express cruiser, 64 x 11, built by Herreshoff Mfg. Co. Two 8 cylinder motors; speed 20-23 miles per hour. Double planked hull, etc. Trial granted.



No. 1614—Raised deck cruiser, 57 ft. x 13 ft., Twentieth Century motor, 50 H.P. Three staterooms, saloon, etc. A1 condition.

Telephone Vanderbilt 10499

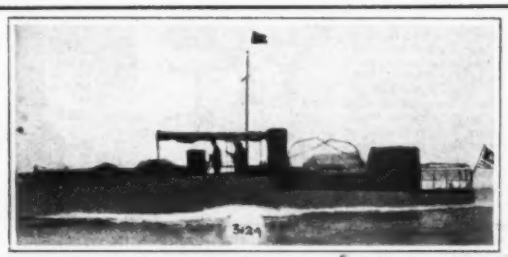
Suite 401

R. M. HADDOCK

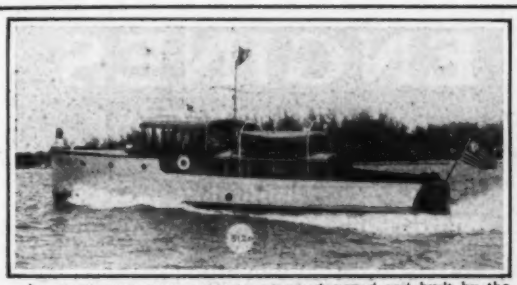
NAVAL ARCHITECT and YACHT BROKER

50 East 42nd Street, New York

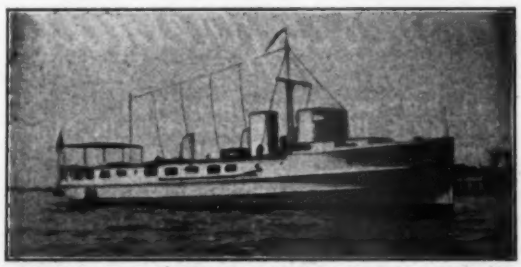
Marine Insurance



No. 3124—For Sale—Fast twin screw cruiser 55 ft. x 9 ft. x 3 ft. 6 in. draft. Two six cylinder motors 150 H.P. each. Speed up to 24 m.p.h. Ideal boat for fast ferry service. Price reasonable for a quick sale. For further particulars apply R. M. Haddock, Naval Architect & Yacht Broker, 50 East 42nd St., N. Y. C.



No. 3120—For Sale: Express cruiser designed and built by the Great Lakes Boat Building Co. Twin screw. Speed up to 20-22 m.p.h. One double stateroom. Now in commission. For further particulars apply R. M. Haddock, Naval Architect & Yacht Broker, 50 East 42nd St., New York City.



No. 310—For Sale: 59-foot Bridge Deck Cruiser, recent build. 70-90 H.P. Sterling engine 1917. A very able boat, economical to run. Price very reasonable. Apply R. M. Haddock, 50 East 42nd St., New York City.

No. 308—For Sale: Twin screw express cruiser 57 ft. x 10 ft. x 3 ft. draft. Excellent condition. Sterling motors. Speed up to 25 m.p.h. Two double staterooms. Can be purchased at a very reasonable figure. For further particulars apply R. M. Haddock, Naval Architect and Yacht Broker, 50 East 42nd Street, New York City.

Telephone
Vanderbilt 0969
Cable Address:
Yachtsan, N. Y.

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YACHT BROKER
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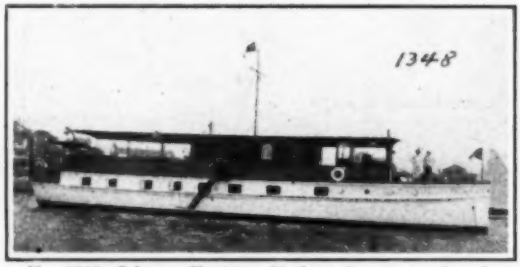
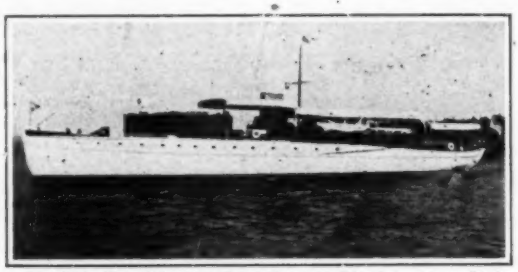
Yacht Appraiser
Ship Broker
Insurance

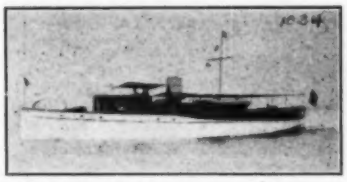
Should you desire to
Buy **Sell** **Charter** or **Insure**
Communicate with this office. Personal attention, prompt service and a complete list of yachts of all types offered.



No. 1346—Sale or Charter. 73 ft. twin screw houseboat cruiser. Four staterooms, two baths. Very comfortable dining saloon and deckhouse. Ideal for Northern and Southern waters and in the pink of condition.

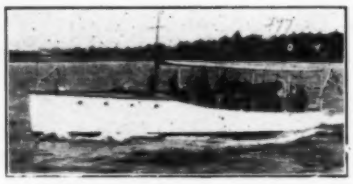


No. 759—For Sale—110 ft. twin-screw Diesel motor yacht in excellent condition. Ideal for extended cruising, having made trip to West Indies, etc. Speed 12-15 miles.



No. 1034—80 ft. twin screw cruiser. 3 staterooms, bath, etc. Speed 13 miles. Very fine yacht.

No. 1391—Modern 36 ft. bridge deck cruiser, sleeping 6 persons Ideal craft Speed 14 miles.



No. 297—45ft. cruiser, one double stateroom and saloon. Speed 11 miles. One of the popular Elco type.

REBUILT ENGINES

"THROUGH SERVICE WE GROW"

The Largest Distributors of New and Rebuilt Engines in the World

Our stock consisting of almost three hundred new and slightly used motors (more than was displayed at the entire New York Motor Boat Show) embraces all sizes, types and makes. Rebuilt, guaranteed and sold at a price consistent with the times. Let us figure with you on your next power plant.

Advise size and type of your boat and about the size engine you want.

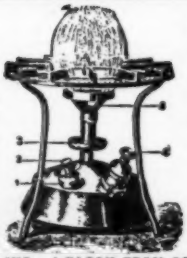
Our bargain list will be sent anywhere on request.

Bruns, Kimball & Company
153-155-157-159 West 15th St.
New York City

R. W. ZUNDEL CO. INC.

ZUNDEL

Genuine JUWEL Kerosene Oil Gas Stoves in stock. The original Juwel Stove made by G. Barthel, Germany. The stove has always been in great demand due to its extreme efficiency, simplicity and excellence of manufacture. Brass fount holds 1 quart; has detachable uprights. Price $4.50. Postage prepaid.



Zundel's Loud Sounding All Brass Marine Horn. Vibrator type, satisfaction guaranteed. Complete with push button and wire. Price $9.50

R. W. ZUNDEL COMPANY, INC. 1 BLOCK FROM SO. FERRY
47 Whitehall St.—Phone Bowling Green 9157—New York, N. Y.

BOAT SUPPLIES

Honestly Rebuilt

Don't buy any motor until you have our latest price list of Masters Rebuilt Motors. Thoroughly overhauled, all worn parts replaced, refinished and guaranteed like new. All sizes. Lowest prices. Write to-day.

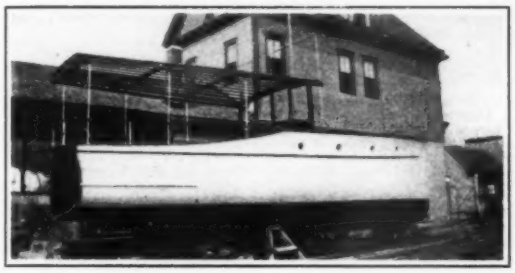
W. L. MASTERS & CO.
Largest Engine Dealers in Central West
231 No. State St. Chicago, Ill.
AUTHORIZED DISTRIBUTORS FOR
STERLING KERMATH UNIVERSAL
STEARNS EVINRUDE JOHNSON
HYDE PROPELLERS JOES REVERSE GEARS

Advertising Index will be found on page 122

Available for southern Winter charter any time after Oct. 1st, 1922. 52′ Mathis huose-boat, built 1920. 60 H. P. Standard motor. Hot water heat. Large owners' state-room, single state-room, dining saloon, bath room and large deck house. Will sleep nine comfortably besides the crew. Completely and beautifully equipped, silver-ware, bedding, dishes, etc. Carries 14′ power tender and 10′ row-boat on lavits.

I will consider a very low figure on a charter for the time consumed in taking the boat from New York to Miami, or other Southern destination.

Further particulars—M. C. Kimball,
153 West 15th Street, New York City.
Or your own broker.
Phone 0468 Watkins.

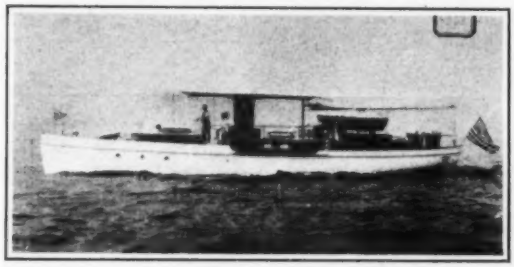


Beautiful brand new 32 x 9 cruiser extra heavy build, mahogany finished ready for Florida use. New 40 horse Doman motor or can install any motor price $3850.00

209-11th Street MAYER C. J., N. Y.

ROAMER III—New standardized express cruiser 54′ x 11′ built by the Great Lakes Boat Building Corp., delivered in June 1922. Boat is mahogany planked. Equipped with two re-built 8 cylinder Van Blerck motors with Philbrin ignition. An opportunity to buy a new express cruiser at a reasonable price.

Earl Holley, Holley Carburetor Co., Detroit, Michigan.



No. 4063—ESTATE ANXIOUS TO SELL—Attractive 64′ Lawley built bridge deck cruiser. Speed up to 13 miles; 6 cyl. 75 H.P. Sterling motor. Large main saloon with two extension berths, double stateroom, toilet room, etc. Handsomely finished and furnished. Very able boat. Built in best possible manner. Quick action will secure a bargain. Cox & Stevens, Cunard Building, 25 Broadway, New York.

WANTED—Boat builders with experience on high grade cruisers. Give complete information in your reply.
Rochester Boat Wks.
10 Charlotte Sta. Rochester N. Y.

For Sale: Palmer engine—20-24 H.P., 4 cyl. 4 cyc. Absolutely first class condition demonstration in 45 ft. cruiser before hauling out. Installing larger motor. H. E. McHugh, 740 E. 220 St., N. Y. C.

For Charter—Fifty foot Auxiliary Yawl—electric lights, every convenience, accommodate six going to Florida or Cuba—$25.00 a day. Captain George Bevin, Trenton Yacht Club, Trenton, N. J.

DOES YOUR BOAT LEAK?

Send for Booklets—"HOW TO MAKE YOUR BOAT LEAKPROOF," and "MARINE GLUE—WHAT TO USE AND HOW TO USE IT."

JEFFERY'S WATERPROOF MARINE GLUE

IN ALL THE VARIOUS GRADES Each grade is for a different purpose. IT IS IMPORTANT THAT YOU USE THE GRADE WE RECOMMEND. Any old boat, so long as the frames are in fair condition, can be made water-tight by following the instructions in the above booklets. This applies to anything that floats, from a canoe to a yacht, wood or steel. Put your leak troubles up to us; we will help you to stop them.

For sale by all Yacht, Boat and Canoe Supply Houses; Hardware, Paint and Oil, and Sporting Goods Dealers

L. W. FERDINAND & COMPANY, 152 KNEELAND ST., BOSTON, MASS., U.S.A.

Racing Hydroplanes—Special High Speed Runabouts

75-85-95 AND 100 M. P. H. BEEBEE DESIGN 40-50-60 AND 75 M. P. H.

CLASS RACING BOATS "MOTO-ROW" OUTBOARD BOATS ROW BOATS

SYDNEY C. McLOUTH, MARINE CITY, MICH.

The Barker Motor (Two-Cycle)

"Have run my Barker Motor thirty thousand miles in ten years and it is good for ten years more."—Name on request.

Built for long service—New low prices in effect

The BARKER FACTORY *Norwalk, Conn.*

Write today for "Red Letter Book" of Motors

In New York: TOPPING BROS., Varick and Vandam Sts. In Boston: TOPPAN CO., 101 Haverhill St.

THE MOTOR BOATING MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 6 cents per word, minimum $1.50. If an illustration is used, the charge is as follows, which includes the making of the cut:

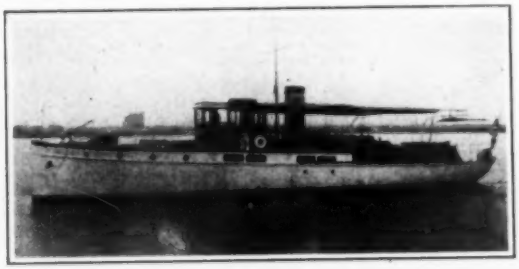
Cut one inch deep, two inches wide..... $ 7
Cut 1½ inches deep, three inches wide..... $10
Cut 2¼ inches deep, four inches wide..... $15
Cut 2¾ inches deep, 7 inches wide..... $20

Terms: Cash with order.

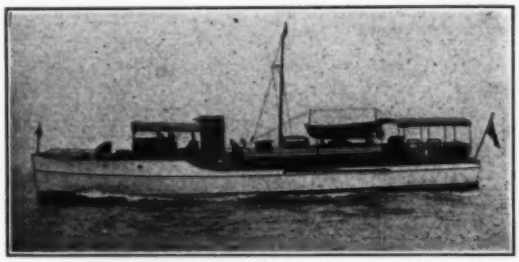
Classified advertisements set entirely in small light face type. No extra charge for capitals. Bold face type used at display rate, $12 per inch, single column.

Opportunities for the Motor Boatman

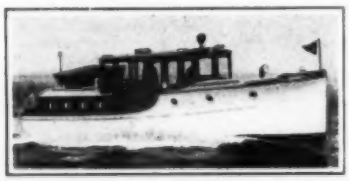
Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



684. Twin Screw Coast Cruiser, 70 x 14 x 3½. 3 double staterooms. Dining saloon and galley each full width. All modern appointments—hot water heat. Richly upholstered; fully equipped. Standard motors controlled from deck house; speed 12 miles. Unusual opportunity to purchase or charter for any period for Southern cruising one of the most wholesome craft available at attractive terms as owner desires immediate trade. In commission near New York and ready for prompt delivery. Address SIMON FISCH, Yacht Broker, 185 Madison Avenue. New York. Vanderbilt 3877.



For Sale—Yacht Celeritus, 61 ft. O. L. x 11 ft. 6 in. x 3 ft. 9 in. Designed by Swasey. Built by Jacobs 1916. Redesigned 1919. Motors overhauled 1920. Power plant, two Sterling eight cylinders 150/200 H.P. each. New power dingey built 1920. Perfect order. Complete inventory. Price, any reasonable offer considered. Must be sold this season. Apply Oliver, 417 Canal Street, New York.



FOR SALE:—Used 40 foot enclosed Rochester cruiser equipped with 6 cylinder G. R. Sterling developing 20 miles per hour. Just completely refinished and engine overhauled. An exceptional cruiser at the right price.

Rochester Boat Works, Inc.
10 Charlotte Sta. Rochester, N.Y.

WANTED

A 45 ft. bridge deck cruiser suitable for Florida waters. I have a 31 ft. bridge deck cruiser to trade as part payment. 9 ft. beam, 3 ft. draft, new Scripp's model D. 4 cylinder engine with an electric starter. Boat all complete and fully equipped, address Dr. Burton, 44 S. Gratiot Ave., Mt. Clemens, Mich.

FOR SALE—BRIDGE DECK CRUISER, first class, built 1917, 48x11½. Six cylinder electric started Sterling motor, tender and complete equipment. Also 31x60 new boat house, 20 foot fishing launch with Universal motor, home with seven rooms, two baths, garage, tropical fruits, palms, cocoanuts. Near Bradentown on Manatee River. Best living, fishing and boating location in Florida. Unusually attractive outfit. Robert L. Stillson, Campgaw, N. J.

WANTED: Yacht tender launch; about 17' in length; light weight, complete, up to date; good burdensome boat to use on 90' motor boat. Motor must be modern type, two cylinder or more; Universal preferred. Advise full particulars, price, weight, condition, etc.

Also have for sale 15' motor yacht tender with Palmer single cylinder motor; very light; new this season; or will apply as part payment for larger launch wanted as above, if trade desired. Write full particulars.
Apply DeVer H. Warner, Bridgeport, Conn.

TRIMOUNT WHISTLE BLOWER OUTFITS

Blower runs by friction contact with engine fly-wheel. Whistle of brass, nickel-plated.

Made in 3 sizes.

TRIMOUNT ROTARY HAND BILGE PUMPS

All bronze composition Suction lift 6 to 20 feet. A lifelong convenience.

Made in 3 sizes.

TRIMOUNT ROTARY POWER CO.
90 Heath Street Boston, Mass.
(Factory: 292 Whiting Ave., E. Dedham, Mass.)

For Sale: Seabright Motor Boat, 21 x 6 ft. Half cabin. 8 H.P. 2 Cyl. Regal Engine (new) reverse gear. Just the boat for Florida.
P. R. Paine Jr. Box 263, Charleston, S. C.

Do you want a naval veteran as keeper for your yacht or your houseboat when it is out of commission. Excellent references. Box 58 Ampere, New Jersey.

The famous Dexter II, 26' full mahogany trim runabout—Wisconsin 110-H.P. engine just overhauled, Bosch dual ignition a consistent winner at Fox Lake races—Price $1100. L.B. Green, Fox Lake, Ill.

For Sale—Thirty three foot boat, new last year, beam 8 ft. 6 in., draft three feet, 40 H.P. H.P. Kermath engine, electric starter, electric lights, hot and cold water, toilet, complete galley, sleeping accommodations for four. Price low for quick sale.
Adress Box 40, Motor Boating.

For Sale—Power cruiser 47 ft. x 12 ft. x 3 ft. 9 in. Built August, 1920. Speed 12 M.P.H. 4 cyl. Sterling engine. Separate electric lighting plant. Mahogany finish below and on deck. 3 toilets. Crew's quarters sleeps two. Owner's quarters, two staterooms and main saloon, sleeps seven. Bridge deck control. Engine room in separate compartment under. In Al shape, fully found and now in commission. For further particulars address MoToR BoatinG, Box 35.

FREE Illustrated Literatures. Outboards, New and Rebuilt Engines. Universal Joints, Pumps, Clutches, Gears, Hyde's, Gordon Reversible Propellers, etc. Canadian Boat & Engine Exchange, Toronto.

Sub-Chaser—Tip top shape, ready, can be converted into first class ocean going yacht, has Delco lighting system, three 220 H.P. eastern Standard gas engines. Price $7,500. Less than the cost of one engine. Now laying at West End, New Orleans, Louisiana. James Thom, 7266 New Basin Shell Road, West End, New Orleans, La.

For Sale—New and rebuilt marine engines. Write for list of bargains. Anderson Engine Co., 4032 No. Rockwell St., Chicago, Ill.

For Sale—Bridge deck cruiser 50 x 10½ x 3'10". Excellent Florida boat, at very reasonable price. Exceptionally roomy and staunchly built. Sleeps 6 comfortably (accommodations for 8). 3 toilets, 3 lavatories, generous fuel, water and ice capacity. 4-Cylinder 6 x 8. Standard motor. Everything in perfect condition. Dr. Alfred Walker, 100 West 59th Street, New York City. Sale. Exchange. Charter.

AN ISLAND FOR SALE near Boothbay Harbor, Maine; About one to two acres; Partially furnished house; Fine fishing and boating; Very low price quick sale; E. F. Merrow Hyde Park, Mass.—Tel. 767 M

Miami———Florida.

WANTED—Auxiliary Cruiser, heavily timbered. Have Entire Island, Sandy Beach, Cocoanut Palms, Lower East Coast Key. Finest Fishing, Wild Pigeons, Ducks, etc. Valued at $10,000. WANTED—40 to 50 Cruiser. Have Equity of $2,900 in Philadelphia Home, Balance Payable $40 per Month. Valued, $7,500. Snare & Co., Yacht Brokers, Estate Agents.

FOR SALE—Nicely finished, quarter sawed oak, glass cabin cruiser 63 ft. by 9'6" beam, 4 ft. draft. Electric starting six cylinder Sterling motor, good as new. A bargain for $4,500.00. JESIEK BOAT CO., Grand Rapids, Mich.

A few pair of very powerful and clear Bausch & Lomb Prism Binoculars, 6 x 30 power, complete with case, etc. Worth $75.00, will take $40.00. Percy M. Child, 1110 14th St., N. W., Washington, D. C.

One 70 volt, 75 amp. direct connected Winton four cylinder generating plant, worth $1250.00, will take $500.00. One 110 volt, 39 amp. direct connected Winton four cylinder generating plant, worth $1250.00, will take $600.00. One 110 volt, 15 amp. direct connected one cylinder Carlisle & Finch generating plant, worth $350.00, will take $175.00. One 18 in. Rushmore search lamp, 35 amp., deck type, will take $125.00. One set large galv. running lamps, both oil and electric, suitable for vessel up to 100 ft., complete four lamps, $20.00. Let me quote you on marine search lamps, all sizes. Percy M. Child, 1110 14th St., N. W., Washington, D. C.

Four Cycle

4 HP Dunn, 2 cyl.	$40.00
6 HP Dunn, 3 cyl.	55.00
10 HP Doman, 2 cyl.	110.00
12 HP Holliday, 2 cyl.	105.00
12 HP Lamb, 2 cyl.	115.00
12 HP Samson, 3 cyl.	95.00
16 HP Dunn, 4 cyl.	115.00
25-30 HP *New* Erd, 4 x 6, 4 cyl.	215.00
45-50 HP Globe, heavy duty, with gear, etc.	650.00
One Cylinder, Two Cycle	
4 HP New Perfection	$65.00
6 HP Williams, heavy duty	55.00
8 HP Pierce, "as is"	35.00
Two Cylinder, Two Cycle	
6 HP Gray	$65.00
10 HP Northwestern	75.00
15 HP Ferro, "as is"	45.00
Three Cylinder, Two Cycle	
12 HP LaCrosse, "as is"	$35.00
15 HP Elmore	55.00
25 HP Ferro, 5 x 5, 2 cycle	115.00

THE BADGER MOTOR COMPANY
Milwaukee, Wis.

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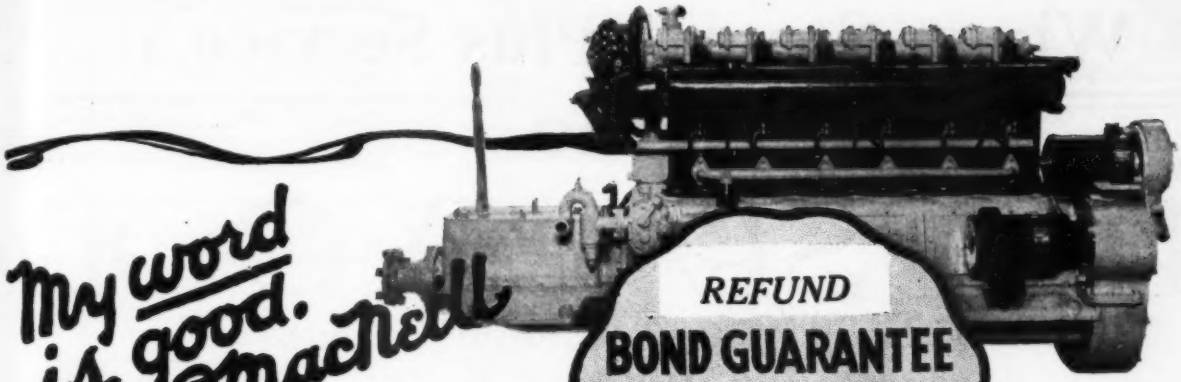


My word is good. D. C. MacNeill

And the BOND backs my word!

REFUND
BOND GUARANTEE
That this motor has been rebuilt from spark-plug to base
The MARINE ENGINE CO.
PHILADELPHIA

When you are in the market for a rebuilt engine, look to the security! Ours to you is absolute.

Look for our seal alongside of the manfacturer's name plate. You will find it on every job over-hauled by the Marine Engine Company of Philadelphia.

That little plate of metal represents my word, backed by my personal Forfeiture Bond for the purchase price of the engine.

We tell you the truth and guarantee that our rebuilt motors are rebuilt from spark plugs to base. Worn parts are replaced. The work is examined and tested on block before shipment is made. Each motor is carefully refinished and has every appearance of a new one.

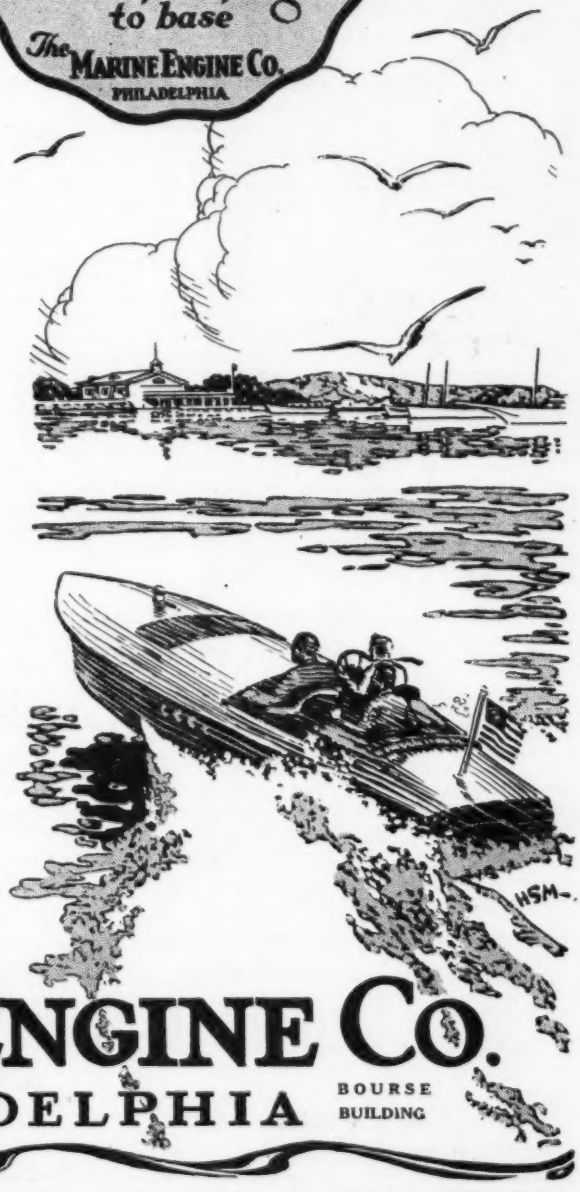
Signed
D. C. MacNeill
Treasurer

We sell only the most reliable new motors, our line has been selected with the greatest care from the best engines on the market, a complete range in size, power, type and price to meet the requirements of every boat. Your old motor will help to pay for a new one, trade it in, and we will make you a fair allowance.

New and rebuilt engines for immediate delivery.

Authorized Distributers for Stock of Rebuilt Engines

Hall-Scott
Wright Reliable
Automatic
Scripps
Gray, 2 & 4 Cycle
Brennan Standard
Sturdy
Niagara
Universal from 2 to 25 K.W. Electric Plant
Hyde & Sterling Propellers
Sterling,
Van Blerck,
Peerless,
Hall,
Automatic,
Red Wing,
Lamb and many others from 2 H. P. up.



Send for this month's Red List of specially priced rebuilt motors

The MARINE ENGINE CO.

MACHINERY EXHIBIT of PHILADELPHIA BOURSE BUILDING

Winter Storage Plus Service at The "HOUSE of WOOD"

What "Winter Storage" Means at the House of Wood

"Where can I store my boat this winter and be certain that it is properly taken care of, not only while hauling out but throughout the winter and in the spring fitting-out?" That is the question of the hour among yachtsmen because the boat improperly stored will deteriorate more during a winter of idleness than through a summer of constant use.

Winter storage at the House of Wood means a great deal more than hauling out and blocking up in the ordinary way. It means expert handling and constant care from the day it arrives to the time it goes in the water next spring. Here is the Wood conception of proper storage service:—

Hauling Out—Two marine railways of 150 tons and 600 tons capacity respectively enable us to handle any size boat with safety and dispatch. Proper equipment and expert workmen avoid any possibility of damage to hull or fittings. Some of our men have been hauling out boats in this yard for the last 40 years.

Moving and Blocking—As boat builders with many years of experience we know just how to handle and block the hull to prevent strain or damage. Remember that a boat on blocks is carried on less than 1% of the surface by which it is supported in the water.

Preparation for Storage—Includes getting dunnage out, removing portable equipment to lockers, cleaning hull inside and out, opening lockers and transoms, arranging for proper ventilation, drying out the bilge, blowing out tanks and lines instead of merely draining them, pumping out toilets with oil, cleaning and lubricating engine parts by skillful mechanics,—all before the covers can be put in place. Such care insures a clean sweet boat in the spring ready for a quick and inexpensive job of fitting out before going into commission.

Storage Space—Ample space for storage, both under cover and in the open. We have just purchased additional property 200 ft. x 100 ft. adjoining our yard which now covers both sides of Marine St. down to the water.

Regular Inspection—Throughout the winter every boat in the yard is regularly inspected with a written monthly report of its condition checking all details turned in for the approval at the main office. Accumulations of snow and ice are constantly removed before damage or deterioration can result.

Reduced Insurance—The construction of new fireproof buildings enables the yacht owner to secure materially reduced rates of insurance during the storage period. At present our yard has recovered more than one half its former insurance rates through improvements and rebuilding.

Repairs, etc.—Every facility is afforded for repairing any part of the hull or power plant that requires attention. Our repairs are not merely a serviceable makeshift but they contemplate restoring the damaged parts equal to new construction, newly finished.

Charges—Considering the services performed our charges are very reasonable. In the end Wood service is far cheaper than ordinary storage charges.

Never a Loss to Any Yachtsman from Fire or Any Other Cause in Over 60 Years

An Old Yard with a New Business Policy

For sixty-two years the House of Wood has steadily built up a reputation for fair dealing and quality workmanship. And now the same business has been reorganized and incorporated by the same ownership, the third generation of the Wood family, together with new blood, new capital and new business policies. Modern methods of organization and administration insure "Superior Workmanship at Moderate Prices." The corporation owns free and clear all of its property and equipment which is a tremendous factor in the reduction of overhead charges and guarantees a minimum charge for all work.

Whether you are interested in winter storage, repairs or in building a new boat, let us get acquainted and quote prices on your work.

B. F. WOOD

Incorporated

Marine Street, City Island, New York City.

Building Refitting Repairs Storage

Advertising Index will be found on page 122

NAVAL ARCHITECTS & YACHT BROKERS

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NAVAL ARCHITECT AND ENGINEER
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I charge a fixed price for my services; not a percentage of cost. This, with my knowledge of the markets, insures a maximum of value at minimum cost. In justice to yourself, let me submit a sketch to your requirements.
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Designer of Sailing Craft, Auxiliaries and Motor Boats. Specialist in V-Bottom Type.

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Sail or Power Yachts, Houseboats and Commercial Vessels
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CHARLES D. MOWER
Designer of
SENSIBLE CRUISERS
POWER—SAIL—AUXILIARY
Twenty-five years' practical experience
350 Madison Avenue New York City

Yard and Shop

(*Continued from page 44*)

Gaille Motors Win

At the third annual water Fete held at Detroit recently, the first races for outboard motor powered boats were conducted. The time event was stimulated by the offering of a silver trophy and other prizes to the winner by the Caille Perfection Motor Company. The results of the race were highly gratifying to the winners as well as to the Caille Motor Company since the first eight boats to finish were all equipped with Caille portable motors of various types. The winning boat covered the two mile course in twelve minutes flat, a remarkable speed of six minutes to the mile.

Marine Glue is Useful for Waterproofing

Marine Glue is absolutely waterproof and a deck painted with a heavy coat of hot glue must be waterproof even before the canvas is applied. The operation of laying the canvas in the glue by ironing it with a hot flat iron draws a portion of the glue up into the pores of the canvas, fiilling and waterproofing it, so that no water can soak into it or the wood beneath.

In the case of white lead it is neither waterproof nor a filler, it may shed water for a time, but not a very long time. As a filler the best you can hope to do is to work it into the face of the canvas, it does not permeate it as with glue. The worst feature about lead, however, is the fact that the oil or the combination of the oil and lead rots the canvas in a short time, whereas with Marine Glue the canvas is waterproofed and preserved, neither water or oil can permeate it and it will last as long as the boat.

Made particularly for this work Jeffrys Marine glue is prepared in black, white or yellow and in two grades. The manufacturers L. W. Ferdinand & Co., Boston, Mass., have prepared a booklet on the use of this material which they will be glad to send to you.

Kermath Motors deliver Mail

The owner of a heavy auxiliary sloop in the British West Indies, which has been equipped with a 20 h. p. Kermath motor, writes to the Kermath Manufacturing Company an account of the performance of this engine in his boat. The letter is very interesting and reads as follows: "The original boat for which I purchased the engines was a 28-foot steel life boat belonging to an ex-German ship Polrosa, which was taken over by the British during the war. Polrosa was wrecked off of Barbuda on the twelfth of August 1915 and some of the crew escaped in the life boat and eventually fetched St. Kitts about 90 miles to the northwest of where the wreck occurred. The life boat was taken over by the Receiver of Wrecks from whom I bought it some time later.

I converted this boat into a cabin cruiser which I put into commission in 1918 and from then she gave me almost continuous service until the early part of 1921, when owing to her bottom becoming rusted through I had to abandon her.

I then started to look about for another hull to put the Kermath in, but could find nothing suitable at the time. However in September of the same year several of the West India Islands were visited by a severe tropical storm and one of the minor results was that I was able to get the desired boat.

She is a little five ton sloop 28-feet overall built in Guadeloup French West Indies and was apparently lying at anchor in one of the ports of that island at the time of the storm, when she broke her anchor chain and west adrift. She was picked up by a boat belonging to this island and towed here.

In conjunction with another boat she now runs on a Government contract for carrying mails between this island and our nearest neighbor St. Kitts about thirteen miles away. She is a very stiff and seaworthy little craft and is capable of making the crossing in almost any weather, although part of it is an open channel down which one gets frequent heavy squalls.

Her maximum speed is about ten knots but for working purposes she runs at something less than this making the crossing in from 1½ to 1¾ hours as a rule. The engine still gives very good service and in the last few months has done not less than a thousand miles at a conservative estimate.

(*Continued on page 94*)

FREDERIC S. NOCK
NAVAL ARCHITECT
Yacht Builder, Marine Railways, Storage and Repairs
East Greenwich, Rhode Island, U. S. A.

RALPH E. WINSLOW
Naval Architect
River Street, ATLANTIC, MASS.
Designer of high grade wood and steel, Steam, Motor, Auxiliary and Sailing Yachts and Commercial Vessels.
18 years' experience. Stock plans.
Phone Granite, Mass., 1011 or 2599-M

How Bearcats Perform

STANDARDIZED Belle Isle Bearcats are designed and constructed to give season after season of dependable service as fast, seaworthy family runabouts.

The wide-spread popularity of these remarkable boats, however, is causing owners everywhere to enter them in speed events at important regattas against especially built racing craft of lighter construction and greater horsepower.

It is interesting, therefore, to observe the character of performance rendered by stock-built Bearcats in speed contests of national importance—despite the fact that they are neither intended nor represented to be racing craft.

Thirteen powerboats were entered in the recent Gold Cup race at Detroit. Of these, four were Bearcats.

Only seven boats finished the final heat. Four of these were Bearcats.

In a field of thirteen starters, Bearcats took fourth, fifth, sixth, and eighth places, despite the fact that three of the boats had among the smallest motors in the race, with a cubic displacement of only 549 inches when a limit of 625 cubic inches was permitted.

All standard Bearcats are sold with a speed guarantee of 32 M.P.H. The slowest lap of the slowest Bearcat entered in the Gold Cup race was 34 M.P.H.

Three of the stock-built Bearcats were the only Gold Cup entries to race in other events during the regatta. These participated in practically every event for which they were eligible, including the Bearcat Circus which was the hardest test to which a hull could be subjected.

Of special significance is the fact that this same trio of Bearcats took first, second and third places in the Ladies' Powerboat race, finishing in the same order and in same average time as in the final heat of the Gold Cup race when driven by men. The truly remarkable feature of this event—which illustrates the ease with which a Bearcat is handled—lies in the fact that one of the women drivers, until five minutes before the starting gun, had never had her hands on the wheel of either a motor car or a motorboat before.

Thus, even when pitted against America's fastest especially designed racing craft, stock-built Bearcats made a remarkable speed showing, and an unapproached record for dependable performance.

The Hall-Scott marine motor is standard equipment in the Belle Isle Bearcat.

Place orders now to insure prompt delivery for the opening of the Florida Season.

Belle Isle Boat & Engine Company

Makers of Belle Isle Bearcats,

9662 E. Jefferson Ave., Dept. B Detroit.

Gold Cup Races, a Great Success

(*Continued on page* 15

The real race for first place was between Packard Chriscraft, owned and driven by Colonel J. G. Vincent, and Arab VI, owned and driven by Commodore Ralph H. Sidway of Buffalo. Packard Chriscraft was powered with a Packard motor, using six of its original twelve cylinders. Arab VI was powered with a 6-cylinder Sterling Seagull motor. The hull of the former was built by Chris Smith of Algonac, and Arab VI was designed and built at the John L. Hacker Boat Company of Detroit. Unfortunately, Arab VI, as a whole, was more or less of a last-minute creation, as the hull was originally designed for a lighter and smaller motor besides being heavy. However, after the change had been made she performed wonderfully well and only lost the second heat by 1.4 seconds in thirty miles.

Other craft whose performances were remarkable and should be given particular mention were Red Bird, entered by Win Wood, of Minneapolis, powered with a special 8-cylinder motor, and Bearcat Special, entered by Richard Locke of Detroit and powered with a Sterling Seagull. These boats finished the series in third and fourth positions, respectively.

Bearcat Roamer, owned by S. Morgan of Detroit, was powered with a Hall-Scott as was Demon Bearcat, entered and driven by Commodre F. C. Ericson of Hamilton, Ontario. These boats finished in fifth and sixth places. The boat to finish in seventh place was Baby Gar Jr., the 26-footer, owned by Gar Wood, the defending boat. Baby Gar Jr. was powered with a Liberty motor with six of the cylinders removed and the other six considerably reduced in size. However, the arrangement did not prove a success as a considerable heat developed which burned the pistons causing the boat to drop out at the end of the second heat. On the third day, a new motor was installed of another make, but the change did not prove successful.

Bluebird, owned by P. Gray of Minneapolis, proved a consistent runner, but met with propeller and rudder trouble on two of the days.

Before the races, great things were expected of Goldfish, entered and driven by Edsel Ford. Goldfish was a 25-footer, especially designed and built by Hacker of Detroit for Mr. Ford. She was powered with a special 8-cylinder X-Type motor which was designed and built in Mr. Ford's own plant. The outfit ran well at the start but did not have sufficient speed to stay with the leaders and after a few miles was obliged to withdraw on account of broken cylinders.

Zephyr, another specially built boat by Hacker, owned and driven by Paul Strasburg, also met with misfortune. This boat was powered with an especially built aviation motor and while at the start of the race it appeared that Zephyr would be a strong contender for first honors, yet her speed greatly slowed up and she finally put out of running by a broken crankshaft.

The other entries were Miss Mary, owned by E. L. Grimm of Buffalo and powered with a 4-cylinder Peerless motor; Chriscraft II with a Hall-Scott motor and Bearcat Bee, one of the stock Bearcats powered with a 4-cylinder Hall-Scott.

The performance of Nick Nack, which is now in her second racing season, was up to her usual high standard. This boat, driven by Commodore Ericson of Toronto, was by far the best turning boat in the field and performed 100 per cent. Nick Nack was compelled to stop twice in the last day's race to get rid of dirty gasoline and not through any fault of the engine itself.

Zephyr, the Hacker-Strasburg boat, which went very well for two days and then went out of the race, was powered with a 4 cylinder Hall Scott airplane motor having a bore and a stroke of 5 x 7 inches. The crankshaft and working parts of this motor were very much lighter than the Hall Scott marine motors and as the other contestants had 75 inches more piston displacement than this motor, it was necessary to drive Zephyr's motor to the limit to stay up with the leaders. The result was that this light aviation job did not stand up under the gaff. The same story is true and the results were the same in connection with the other aviation motors in the Gold Cup boats. The motors which were strictly marine came through with nearly perfect scores while the rebuilt aviation motors fell down most miserably.

Colonel Vincent, in his Packard Chriscraft, won the Gold Cup in three straight heats. While Gar Wood, in his Baby Gar, Jr. got over the line first in the first heat and held the lead for a lap or two, yet after that, Packard Chriscraft was never headed. Colonel Vincent, although a newcomer in the sport and driving his first Gold Cup race, handled his boat as though he had been racing for years and drove a much better race from many standpoints than many of the other drivers who have been racing for years.

It was apparent, from the moment Packard Chriscraft took the lead away from Baby Gar, that Colonel Vincent would win, provided his boat would go through the ninety miles of racing on the three days without engine trouble. As later results

(*Continued on page* 60)

HALL-SCOTT

Belle Isle Bear Cat

The "Ladies' Race" of Bear Cats at Detroit

SPEED boat racing as a sport entered a new era with the running of the Ladies' Race of Belle Isle Bear Cats at Detroit, September third. Three of these wonderful little 26 ft. mahogany runabouts in the hands of their fair drivers flew around the course for ten miles at a speed of 35 miles per hour.

Most remarkable of all was the finish because the first two boats came in six seconds apart and the third followed less than half a minute later. This proves not only the absolute standardization of these boats but also shows the characteristic consistency of the Hall-Scott Marine Motors with which all Bear Cats are equipped.

Hall-Scott Marine Motors have established a new standard of reliability for fast turning motors. They are built to operate as steadily and dependably at 1200 to 1500 R.P.M. as the average slow speed or medium duty motor which operates at 400 to 800 R.P.M. And Hall-Scotts are far lighter in weight than any other marine engines of equivalent power, permitting lighter, faster and more economical boats. The 4 cyl. 125 H.P. Hall-Scott weighs 1100 lbs. The 6 cyl. 200 H.P. Hall-Scott weighs 1300 lbs.

Write today for descriptive catalogs and actual facts about Hall-Scott installations. Mention size and type of your boat and present power.

SINGLE AND TWIN SCREW PLANTS IN STOCK AT

HALL-SCOTT MOTOR CAR CO., Inc.

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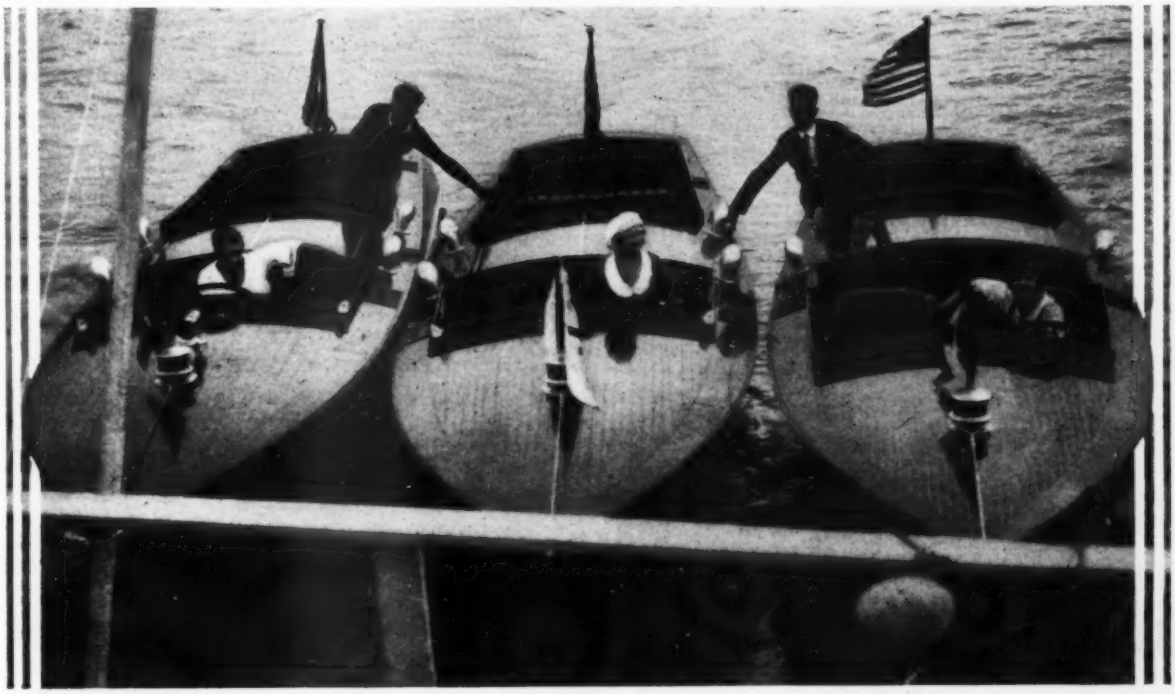
Factory: Berkeley, California



NIAGARA "Special", 9-15 h.p. Unit Power Plant

Complete to the Last Bolt

HERE is the ideal engine for that small cruiser, runabout or open boat. In quality of construction and completeness of equipment you'll find it right up to the standard of the larger four cycle motors. In price you'll find it down to the level of the old two-cycle jobs that are fast becoming obsolete.

NIAGARA "Special" is a 4 cylinder, 4 cycle unit power plant that develops 9 to 15 H. P. at 900 to 1800 R. P. M. Notice the built-in rear starter, reverse gear, sight feed pressure lubricating system, magneto ignition or Atwater-Kent system, bronze rotary water pump, removable cylinder head, covered valve mechanism and other high grade features. The bore is 2-⅜ in. and stroke 4 in., giving real power for medium duty or semi-speed service.

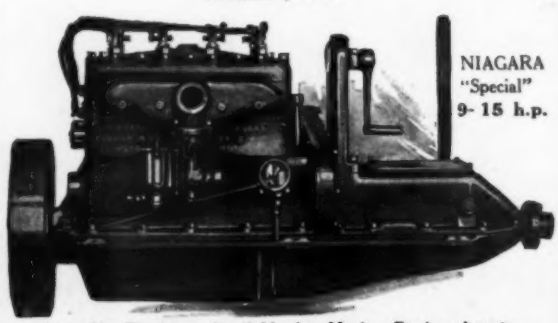
Other Niagara Motors up to 120 H. P.

We have been building high grade four cycle marine motors for many years and hundreds of Niagaras are giving complete satisfaction in pleasure and commercial boats the world over.

The NIAGARA E-2 is 12-14 h.p., 2-cyl. 4 cycle, for FISHING AND HEAVIER SMALL BOATS.
The NIAGARA E-4 is 20-30 h.p., 4 cyl. 4 cycle, for FISHING, LIGHT CRUISERS AND SPEED RUNABOUTS.
The NIAGARA D-4 is 40-60 h.p., 4 cyl. 4cycle, for COMMERCIAL BOATS, TUGS, ETC.
The NIAGARA D-6 is 60-120 h.p., 6-cyl. 4 cycle, for CABIN CRUISERS, MOTOR YACHTS, PASSENGER AND SERVICE BOATS.

We build a motor for every boat from 14 ft. to 62 ft. Write today for catalog and prices.

Niagara Motors Corporation
206 Niagara Blvd.,
Dunkirk, N. Y.



Valuable Territory Available for Marine Engine Agents.

Gold Cup Races, a Great Success

(Continued from page 58)

showed, the Packard motor in Packard Chriscraft did go through the entire three days of racing without mechanical trouble of any sort whatsoever. The combination of engine and hull of Packard Chiscraft proved to be a perfect one. The boat rode on an even keel without a jump of any kind and left the water smooth and with little fuss or disturbance. The motor is a 6-cylinder one having a bore and stroke of 5 x 5¼ inches, totalling 618.5 cubic inches. The hull of Packard Chriscraft was built by Jay and Bernard Smith, of Algonac, and while lightly constructed, yet in no sense was it a racing shell or a boat built with the intention of taking advantage of the rules.

Packard Chriscraft went the first thirty mile heat at a speed of 40.2 m. p. h.; the second at 40.6 m. p. h.; and the third at 39.8 m. p. h. The best 2½ mile laps in each of the heats, were 41.5, 40.8 and 40.5 m. p. h., respectively. These speeds for a 26-footer, powered with only 618 cubic inches, are quite an achievement considering the fact that the hull is an honest runabout, and shows the development which has taken place in this type of boat within the last few years.

As already mentioned, Arab VI, owned and driven by Commodore Ralph Sidway of the Buffalo Launch Club, pushed the winner to the limit, especially in the second heat. Arab got away to a poor start in the first heat and it was not until the race was more than half over that Arab went into second place. At the 17½ mile mark, Packard Chriscraft lead Arab VI by over one minute. From this point on, Arab's time was about 4 seconds per lap faster than the leader's and at the end of the thirty miles, Arab VI had made up all but 4 sconds of the time which separated the two boats.

The second heat was a race between Packard Chriscraft and Arab VI for the lead, from the crack of the gun, with the Packard boat leading all the way—but only by a hair's bredth. Arab VI seemed to have sufficient speed to trail Colonel Vincent's craft as close as one second behind him, but did not possess the necessary pep to get by the leader. As long as Arab VI stayed in Chriscraft's wake, one could have stepped from one hull to the other, but the moment she turned out in an effort to pass the leader, she only fell back and was forced to again trail Packard.

Red Bird, owned and driven by Win Wood, of Minneapolis, ran a good third in the second heat, averaging 38.65 miles per hour for the thirty miles, and not far astern, Bear Cat Special, owned and driven by Richard Locke of Detroit, came in, showing a speed of only .2 of a mile per hour slower than Red Bird.

When the third heat was called, everyone expected a race for blood, but all were to be disappointed. In this heat, for the first time, Arab VI got across the starting line nearly three seconds ahead of Packard Chriscraft and held a good lead for about a mile, but from this point on, she dropped steadily astern of not only Packard Chriscraft but of Red Bird and Bear Cat Special. Evidently, Commodore Sidway, driving Arab, had become over-anxions to win and in an effort to get the last ounce of speed out of his boat, had advanced the spark too far and passed the critical point, causing his motor to slow down. The driver did not diagnose the trouble correctly, but assumed that the blades of his propeller had straightened out causing the falling off in boat speed, and therefore made no effort to remedy the trouble. As boat after boat passed Arab, Commodore Sidway lost considerable interest in the race and came in trailing the boats he had had no trouble in beating on the previous days.

As is usual and customary at Detroit, the regatta was not limited to the three heats of the Gold Cup race, by any means. Classes and events were provided for all types of boats and the hundreds of thousands of people who watched the races from the shores of the Detroit River were entertained and thrilled from early morning to evening on all of the four days which were given up to the regatta.

Probably next in importance to the Gold Cup races, was the Wood-Fisher race. This event was taken in three straight heats by Gar Wood's Baby Gar II, with Colonel Vincent's Packard Baby Gar taking second place. Edsel Ford's Wood Fish, which was expected to be the surprise of the year, showed that she had considerable speed and outran both Baby Gar II and Packard Baby Gar in some of the laps of the third heat, but mechanical difficulties prevented the boat from even starting in the first and second heats, and caused breakdowns in the third heat which may have kept her out of first place after she finally did get going. Edsel Ford, who, himself drove Wood Fish, showed that he was a good sport and a good driver in spite of the discouraging features of the race.

For a whole long year, Mr. Ford has prepared for the Wood-Fisher event. For some unexplained reason, he did not report to the Committee until a few minutes before the start of the first heat and at that time, Wood Fish had not taken on her

(Continued on Page 64)

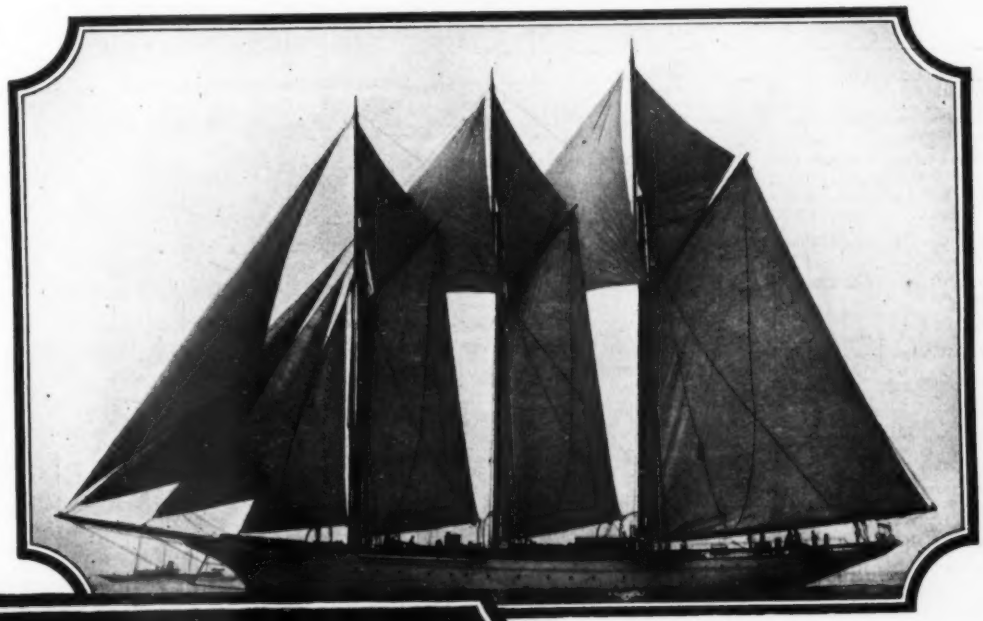
Advertising Index will be found on page 122

AS a part of the Todd Shipyards organization, the Tebo Yard is fitted to undertake the construction or reconstruction of the largest yachts, and perform within its own shops every operation having to do with hull or power plant. Below is the auxiliary schooner ALCYONE which was recently converted from a Steam Yacht to a Diesel-Electric Yacht at the Tebo Plant.

Tebo is the recognized Yard for the storage of yachts. Vessels of this type that make their winter headquarters at Tebo get every advantage of safe storage and low rates of insurance, together with special facilities for their care.

All piers are equipped with air compressor lines, electricity, high pressure salt and fresh water fire lines and are connected with city fire department mains, and adequate protection is afforded by National District Combination Watchman and Fire Service.

TODD SHIPYARDS CORPORATION
Plant of TEBO YACHT BASIN COMPANY
Foot of 23rd Street, Brooklyn, N. Y.



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Todd Shipbuilding & Dry Dock Co., Inc.
Mobile, Alabama

Complete Summary of Fifth Race for Fisher-Allison Trophy

Hamilton, Ontario, August, 24, 25, 26, 1922.

BOAT	OWNER	DRIVER	PLACE WON*	FIRST HEAT 50 Miles			SECOND HEAT 50 Miles			THIRD HEAT 50 Miles			TOTAL RACE 150 Miles		
				Time	Speed	Speed best lap	Time	Speed	Speed best lap	Time	Speed	Speed best lap	Time	Speed	Points
Baby Gar III	Gar. Wood	Gar Wood	1	1-14-02	40.5	46.5	1-18-57	38.05	40.9	1-12-33	41.3	42.8	3-45-32	40.0	21
Packard Baby Gar	J. Vincent	J. Vincent	2	1-14-10	40.4	42.0	1-29-58	33.4	38.1	1-23-47	34.2	42.6	4-07-55	36.3	14
Nick Nack	H. Birge	F. G. Ericson	3	1-18-42	38.1	38.9	1-27-32	34.3	37.1	1-39-04	30.2	37.3	4-25-18	34.0	12
Ionic III	Col. T. A. Duff	Hooker	4	1-24-29	35.5	36.8	1-28-06	34.0	35.3	1-22-53	36.2	36.8	4-15-28	35.3	11
Miss St. Lawrence	Dr. G. H. Stephens	I. Cuppernail	5	1-17-24	38.8	40.0	1-19-06	38.0	38.7	D.N.F.	.....	.....	D.N.F.	.....	10
Rainbow II	H. B. Greening	H. B. Greening	6	1-17-22	38.8	40.4	D.N.F.	.....	.....	D.N.S.	.....	.....	D.N.F.	.....	5
Miss Peerless III	E. L. Grimm	E. L. Grimm	7	1-20-46	37.2	39.3	D.N.S.	.....	.....	D.N.S.	.....	.....	D.N.F.	.....	2
Former Record	.....	.....	.....	Orlo III Buffalo 1-15-27	39.8	41.6	Orlo II Miami 1-17-35	38.8	40.0	Rainbow I Buffalo 1 17-02	38.9	40.4	Rainbow I Buffalo 3-54-44	38.3	.....

Subject to decision on protest

Time Made By Laps—Two Miles Each

FIRST HEAT—August 24, 1922

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total Elapsed Time	Position	Speed	Speed Best Lap
Nick Nack .... H. Birge	3.16	3.05	3.09	3.11	3.10	3.08*	3.08	3.09	3.10	3.10	3.09	3.06	3.11	3.12	3.09	3.08	3.06	3.11	3.06	3.10	3.06	3.06	3.05	3.07	3.10	1-18-42	5	38.1	38.9
Miss Peerless II E. Grimm	3.36	3.10	3.26	3.13	3.08	3.02	3.06	3.06	3.05	3.23	3.16	3.14	3.16	3.13	3.15	3.17	3.20	3.09	3.14	3.12	3.14	3.06	3.07	3.17	3.23	1-20-46	6	37.2	39.5
Rainbow II .... H. B. Greening	4.19	3.03	3.04	3.01	3.07	3.02	3.07	3.06	3.05	3.00	3.00	3.02	3.02	3.03	2.59	2.59	3.02	2.58*	3.00	2.59	3.00	3.01	3.04	3.05	3.15	1-17-22	3	38.8	40.4
Miss St. Lawrence	3.51	3.01	3.07	3.01	3.02	3.09	3.01	3.00	3.01	3.06	3.03	3.04	3.10	3.07	3.04	3.04	3.03	3.02	3.00	3.00	3.00	3.02	3.10	3.12	3.06	1-17-24	4	38.8	40.0
Baby Gar III .. G. A. Wood	4.03	2.54	3.01	2.53	3.06	3.07	3.09*	3.05	2.56	2.52	2.58	3.04	2.59	2.51	2.40	2.35	2.53	2.55	2.51	2.53	2.51	2.48	2.53	2.47	2.58	1-14-02	1	40.5	46.5
Ionic III ..... Col. Duff	3.53	3.23	3.22	3.22	3.18	3.21	3.18	3.20	3.21	3.20	3.23	3.22	3.23	3.23	3.24	3.25	3.20	3.21	3.22	3.20	3.21	3.23	3.23	3.24	3.21	1-24-29	7	35.5	36.3
Packard Baby Gar ..... Col J. Vincent	3.06	2.57	2.58	3.06	3.07	3.06	3.06	3.03	2.59	3.00	2.57	3.00	2.55	2.55	3.07	2.52	2.57	2.52	2.56	2.52	2.51	2.59	2.51*	2.56	2.59	1-14-10	2	40.4	42.0

*Best Lap

SECOND HEAT—August 25, 1922

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total Time	Position	Speed	Speed Best Lap
Nick Nack. ..	4.12	3.41	3.41	3.18	4.00	3.58	3.31	3.35	3.25	3.24	3.24	3.18	3.19	3.14	3.16	3.16	3.27	3.19	3.16	3.22	3.31	3.16	3.18	3.18	3.23	1-27-32	3	34.3	37.1
Baby Gar III..	4.18	3.36	3.28	3.10	3.10	3.06	3.09	3.01	3.07	3.09	3.12	3.05	2.59	3.04	2.56	2.59	2.56	3.01	3.02	3.07	3.10	3.09	3.07	3.07	3.08	1-18-57	1	38.05	40.9
Ionic III.....	4.21	3.34	3.41	3.34	3.31	3.31	3.31	3.33	3.26	3.24	3.29	3.29	3.27	3.26	3.27	3.25	3.30	3.31	3.36	3.28	3.27	3.26	3.27	3.28	3.36	1-28-06	4	34.0	35.3
Miss St. Lawrence.....	3.37	3.15	3.10	3.12	3.11	3.12	3.10	3.09	3.09	3.06	3.08	3.08	3.06	3.07	3.06	3.06	3.07	3.07	3.09	3.08	3.09	3.07	3.09	3.09	3.07	1-19-06	2	38.0	38.7
Packard Baby Gar.....	4.17	4.08	4.05	3.52	4.01	4.06	3.29	4.15	3.41	3.30	3.32	3.18	3.30	3.38	3.25	3.24	3.19	3.16	3.28	3.22	3.10	3.09	3.24	3.24	3.25	1-29-58	5	33.4	38.1
Rainbow II....	4.32	Broke down withdrew																											

*Best Lap

THIRD HEAT—August 26, 1922

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total Time	Position	Speed	Speed Best Lap
Nick Nack....	3.25	3.13	3.15	3.16	3.17	3.17	3.13	3.18	3.17	3.13	3.19	3.14	3.22	3.16	3.22	3.35	3.22	3.22	3.25	3.26	3.25	5.02	3.20	3.30	3.22	1-39-04	4	30.2	37.3
Baby Gar III..	3.14	2.50	2.49	2.49	2.48	2.54	2.52	2.57	2.51	2.54	2.50	2.54	2.50	2.50	2.56	2.49	2.56	2.52	2.51	2.52	2.58	2.55	2.56	3.02	3.04	1-12-33	1	41.3	42.8
Ionic III.....	3.35	3.19	3.17	3.17	3.19	3.18	3.22	3.17	3.18	3.16	3.17	3.20	3.18	3.19	3.19	3.17	3.16	3.18	3.17	3.18	3.20	3.20	3 18	3.19	3.19	1-22-53	2	36.2	36.8
Miss St. Lawrence.....	3.11	3.03	3.01	3.02	3.00	3.03	3.01	3.02	3.02	3.03	3.04	3.01	3.02	3.02	3.02	3.01	3.01	3.02	3.04	3.05	3.36	9.33	5Accepted Tow			D.N.F.	.....	.....	.....
Packard Baby Gar.....	3.00	2.50	2.53	2.49	2.50	2.54	2.52	2.53	2.55	2.51	2.59	2.51	2.53	2.51	4.15	7.18	8.02	3.30	3.15	3.00	2.51	2.50	2.50	2.52	2.51	1-23-47	3	34.2	42.6

*Best Lap

Baby Gar III, one of the standardized Baby Gars. Winner of Fisher-Allison Trophy Race at Hamilton, Ontario, August 1922.

Baby Gar III Wins Fisher-Allison Trophy Race

IF any confirmation is needed of the merits of the standardized 32 ft. Baby Gar runabouts, ample proof is found in the performances of several of these boats at the season's biggest race meets—the meets at Hamilton, Detroit and Buffalo. Exact duplicates except as to power plants, three different Baby Gars proved themselves the fastest boats of their class on the water to-day.

Baby Gar III won the famous Fisher-Allison Trophy at Hamilton, taking first place in all three of the 50-mile heats and defeating the biggest field that ever ran in this event, including boats powered with all the well known makes of high speed marine motors. Average speed for the 150 mile race was 40 M.P.H. and the best lap was run at 46.5 M.P.H. Second place went to Packard Baby Gar, powered with a 12-cylinder Packard marine motor.

In the Wood-Fisher Trophy Race at Detroit, Baby Gar II powered with a 12-cylinder 450 H.P. motor took first place while second place again went to Packard Baby Gar. The best lap for Baby Gar II was 51.5 M.P.H.

At Buffalo, Baby Gar II repeated her performance by wining first place in the 2200 cu. in. displacement boat class, with a speed of 50.8 M.P.H. in one 30-mile heat and a speed of 53 M.P.H. for the best five mile lap.

Remember, Baby Gar is not exclusively a racing boat but is built for practical runabout use, with seating capacity for eight persons. You can buy a duplicate of the above boats with guaranteed speed according to power and full guarantee covering every other detail of hull and power plant. Furnished complete, fully equipped and ready to run.

50 Miles Guaranteed

$8250 (Tax Paid)

Powered with a 450 H. P. Liberty Marine Motor. (1550 cu. in.) Speed guaranteed on 50 mile trial.

45 Miles Guaranteed

$7250 (Tax Paid)

Powered with 300 H.P. Motor (1350 cu. in.) Speed guaranteed on 50 mile trial.

Write today for full details and delivery dates.
Attractive proposition for dealers.

Built by GAR WOOD, Inc.

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N. Y. Territory Representative and Service Station, Caleb Bragg, Port Washington, Long Island. Phone Port Washington 257

Chicago Territory Representative, Webb Jay, Standard Oil Bldg., Chicago, Ill.

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STEEL BOATS CAN'T SINK

Read about the Mullins "V" Bottom—fastest, safest, finest boat of its kind. Write for big, new, illustrated catalog, describing Mullins power boats, rowboats and canoes. Send post card now.

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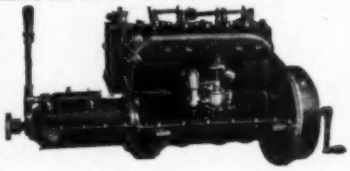
IS USED ON
Lockwood-Ash Model 44 Marine Motor

A No. 2 Modell "F" Ball Bearing Gear Is Shown In a Special Case Design Which Makes An Ideal Unit Power Plant.

Made in Six Sizes Rated Up To 100 H. P.

A High Grade Gear

It pays to buy the best. Ask any user.



Write for Catalog No. 25

Courtesy, Lockwood-Ash Motor Co., Jackson, Mich.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

Gold Cup Races, a Great Success

(*Continued from page* 60)

supply of fuel for the race. In the haste and excitement to get the gasoline aboard in time to make a start, the boat drifted ashore and so severely damaged her propeller that it was impossible to complete the first day. At the starting gun for the second heat, Wood Fish, with Mr. Ford at the wheel, was at the line. The rules provided a standing start, and at the sound of the gun, when Mr. Ford threw in the clutch to make a clean getaway, several bolts in a coupling sheered off putting Wood Fish out of the second heat also.

Another interesting race at Detroit was the competition for the Sallan Trophy which is a Handicap Cruiser event. Some twenty boats started in this race, seventeen of which went through the three days' racing. When the results had been figured up, it was found that the race had been won by Miss Grosse Pointe, owned by Commodore George Marsh of the Detroit Yacht Club.

A number of other events were staged, including a race for the National Association Express Cruiser Trophy which was won by Commodore Kotcher's Betty M; a Free-for-All Runabout race for the Commodore Kotcher Trophy, won by Edsel Ford's Wood Fish; a Handicap class, open to runabouts, for the Detroit News Trophy, won by Past Due, owned by F. Haines; and a race for the Belle Isle Boat & Engine Company's Trophy, with ladies having entire charge of handling the boats, which was won by Bear Cat Roamer driven by Mrs. C. S. Morgan. In the ladies' Bear Cat race, second place was taken by Demon Bear Cat, handled by Mrs. E. M. Gregory, and third by Bear Cat Bee, in charge of Mrs. L. H. Thomson. All of these boats were Bear Cats and powered with Hall-Scott marine motors. The boats were handled entirely by the ladies without the services or assistance of men. The ladies showed that they were able to handle the Bear Cats fully as well as the men drivers and the speeds which they made in the race, bear out this statement.

As usual, the Detroit Yacht Club handled a chance race during the Gold Cup regatta. Thirty-two craft started in this event which was won by Gar Wood's Miss America I, with the Commodore himself at the wheel. In the drawing for prizes, however, White Cap, owned by C. A. Peckham of the Toledo Yacht Club, the boat which finished twelfth, was the lucky one to draw first prize.

The usual efficient officials were in charge at Detroit and all the details were handled with the customary degree of perfection. Commodore Fred Still acted as Chairman of the Race Committee and was assisted by Commodores Barthel, Hackett and Gunnison. Eddie Edenburn, as usual, was master of ceremonies and looked after all the details in his characteristically efficient manner. The races were all timed electrically, down to .002 of a second by the use of the horograph, the timing instrument loaned to he Committee by the Indianapolis Motor Speedway and operated by Odis F. Porter of Indianapolis, chief timer for the famous 500 mile automobile races. Henry Sampson, Jr., of New York City, official timer of the American Power Boat Association, acted as official timer for the Detroit races. J. Lee Barrett, was in charge of entertainment and other shore activities, as usual. Commodores Schantz, Heckel, Cutting, McLeod, Woodruff and Metzgar were among the judges, and others assisting included C. B. Lockwood, W. S. Gilbreath, L. J. Bailey, Arthur Utz, Ira Hand, William E. Scripps, Dr. John G. Harvey, Commodore Eugene Quigley, F. J. Clippert, S. B. Eagan, H. B. Greening, C. A. Criqui, T. E. Myers, E. O. Rippingille and Chester Ricker.

Complete summary of the results will be found on page 72.

Proper Routine For Yachts And Yacht Clubs

(*Continued from page* 25)

It is displayed during daylight at the starboard main spreader when neither owner nor guests are on board. An absent signal does not exempt a boat from the usual yacht routine.

The owner's meal flag is a white rectangular one. It is displayed in daylight during an owner's meal hours, at the starboard spreader.

The guest flag is a rectangular blue flag with a white stripe running diagonally across from top of fly, and should be displayed at the starboard spreader when guests are on board during the absence of an owner.

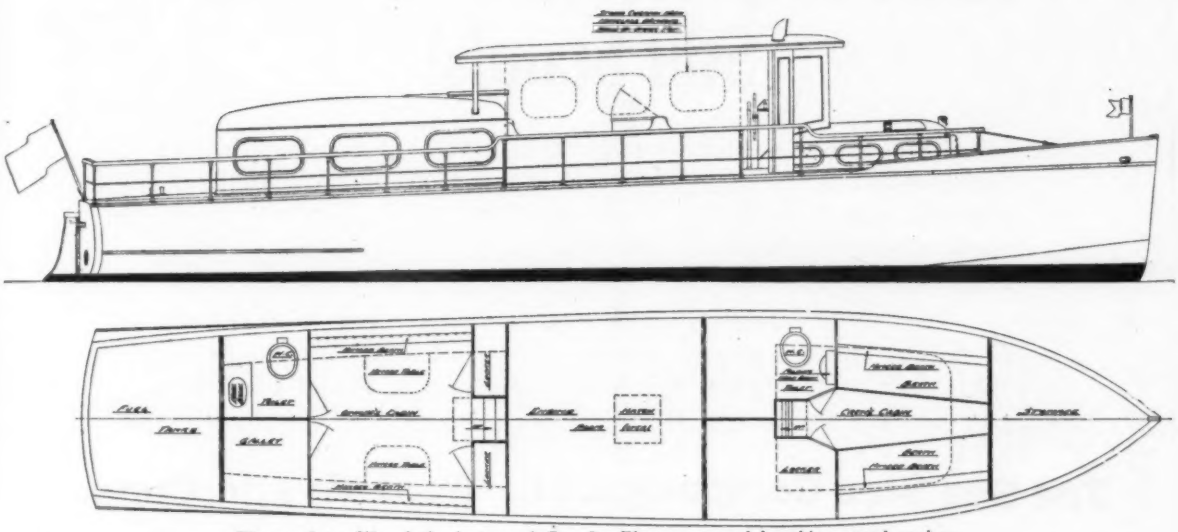
The crew's meal pennant which is red, should be displayed during the crew's meal hours at the port yardarm. In a case of a boat with two or more masts, it should be displayed from the foremast.

When a yacht comes to anchor or gets under way, her colors should be hoisted, although the time is earlier than 8 A. M. or later than sundown, provided there is sufficient light for the colors to be recognized. On entering the harbor under such circumstances, colors should be hauled down immediately after anchoring. (*Continued on page* 66)

Advertising Index will be found on page 122

THE "Gar Jr. Flyer"

A New Standardized Guaranteed 30-Mile Commuter



Plan and profile of the improved Gar Jr. Flyer, a record breaking speed cruiser

Developed after the famous GAR JR II (shown below) (With Improvements in Profile, Deck and Internal Arrangement)

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Dependable—Low Cost
Economical Operation

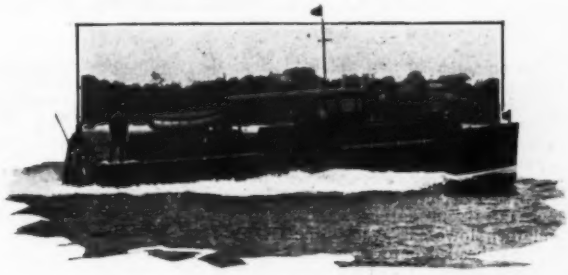
FROM NEW YORK	Foot of East Twenty Third Street	to GREENWICH	55 Minutes
		" GLEN COVE	44 "
		" PORT WASHINGTON	42 "
		" OYSTER BAY	55 "
		" LARCHMONT	42 "
		" GREAT NECK	26 "
		" SOUTHAMPTON	4 Hours

Prompt Delivery

Now Available for Thorough Demonstration

Built By:—GAR WOOD, DETROIT, MICH.
Exclusive Sales Agents:—COX & STEVENS, NEW YORK

A 50-ft. twin screw motor yacht with sustained high speed, free of vibration, and remarkable seagoing qualities (as demonstrated by GAR JR. II in various long distance ocean races).



The hull construction is of highest grade (double planking—outer skin of mahogany). Fittings and furnishings of the best.

Power plant consists of two twin-six "Liberty" motors developing 450 H.P. each, perfect in balance and control, absolutely reliable, and practically automatic in operation.

A trained engineer will be furnished with each boat, and a guarantee from the builder as to speed and handling qualities.

For price, plans and full particulars, apply to

COX & STEVENS 25 Broadway, New York City

Telephone: WHITEHALL 2700

Inverted V-bottom and Surface Propeller Boats. **SEA SLED** Hickman Patents in all countries.

Trade Mark Reg. U. S. Pat. Off. Trade Mark Reg. Canada.

World's Displacement Boat Record Still Stands!

Although no Sea Sled was raced at the regattas at Hamilton, Detroit and Buffalo this season the record of 57.799 statute miles per hour made by Orlo III, under Fisher-Allison Trophy conditions, with a pair of marine engines weighing 4200 pounds, is unapproached. Her best single run in official mile trials was at the rate of 61.22 statute miles per hour.

The immense superiority in efficiency of Sea Sled principles is indicated in the fact that this season's records were made by boats of refined design with motors of the lightest weight and highest power, while the Sea Sled Orlo III was designed and built in a month.

The Sea Sled Company, Ltd., West Mystic, Conn.

Proper Routine For Yachts And Yacht Clubs

(*Continued from page 64*)

On occasion of national mourning, the ensign only should be half-masted. On the death of the yacht owner, the club burgee and his private signal, but not the ensign, should be half-masted. When mourning is ordered for the death of a member, the club burgee only should be half-masted. These rules apply to a yacht at anchor and under way and to club stations.

In half-masting colors, they should—if not previously hoisted—be first mast-headed and then lowered to half-mast. Before lowering from half-mast, colors should be first mast-headed and then lowered. When the ensign is at half-mast it should be mast-headed before making or returning a salute.

Dinghies and yacht tenders, when under way, should fly an ensign aft and the owner's private signal from the bow staff, provided the owner is on board; or the club flag from the bow-staff if a member, but not the owner is on board, or a flag officer's flag from the bow-staff if a flag officer is on board the tender. If no owner, member, or flag officer is on board, no flag should be flown from the bow-staff of the yacht tender. Tenders moored astern, at the boat boom or being towed should fly no colors.

In making colors, salutes, etc., the yacht should always represent the rank of its owner, whether he is on board or not. The time for making and lowering colors should be taken from the senior officer present or from a naval vessel or navy yard. The time for colors in the home anchorage of another club should be taken from the senior officer present.

The club burgee and private signal may be made up and mast-headed previous to colors and broken out when the signal for colors is given. The ensign should never be made up and broken out; always hoisted.

A blue pennant with a length of one inch for each foot of height of truck from the water may be displayed at the main truck during such times as no other flag is hoisted.

When at anchor, the Commodore's flag-ship should display from sunset to sunrise, two blue lights, vertically at the stern. The Vice-Commodore's boat should display two red lights, and the Rear Commodore's boat, two white lights at the stern. When a yacht is at anchor and her owner is absent, a blue light should be displayed after dark from the starboard main spreader. At night during the owner's meal hours, a white light should be displayed at the starboard main spreader.

All salutes at the club anchorage should be made and returned from the club house; when in a foreign port, from the senior officer present. Whistles should never be used in saluting.

No guns should be fired for colors except by the club house or the yacht giving the time, nor from colors at sunset until colors next morning.

No guns should be fired on Sunday.

All salutes should be made by dipping the ensign once. Vessels of the United States and foreign navies should be always saluted.

When a flag officer comes to anchor, he should be saluted by all yachts present except in cases where there is a senior flag officer present.

When a yacht comes to anchor where a flag officer is present, such flag officer should be saluted.

A junior flag officer anchoring in the presence of a senior should salute.

Yachts passing should salute, with the junior saluting first. Yachts should salute on arriving at the home anchorage of another club.

The senior officer when leaving the anchorage, except temporarily, should indicate the transfer of command to the next in rank by firing a gun on getting under way, which transfer should be acknowledged by the firing of a gun by the senior officer present.

A Captain's salute on entering should be acknowledged by the officer in charge of the anchorage. (This rule does not apply to yachts leaving for or returning from a day's sail.)

The order of entering and leaving tenders and dinghies is: juniors enter first and leave last.

Tenders and dinghies made fast to the stern of a yacht at night should show a white light.

Many Piston Rings Are Being Made

A recent production record of 5,232,051 Quality piston rings during two consecutive working months is an index of the volume of replacements being made in the automotive field. Although the Piston Ring Company plant at Muskegon, Mich., is said to be the largest exclusive piston ring factory in the world with a capacity of 12,000 rings per hour, there is every reason to believe that further expansion will soon be necessary to keep abreast of the ever increasing demand for Quality piston rings.

Advertising Index will be found on page 122

Inverted V-bottom and Surface Propeller Boats.

SEA SLED

Hickman Patents in all countries.

Trade Mark Reg. U. S. Pat. Off. Trade Mark Reg. Canada.

The Practical Shallow Draft High Speed Runabout of Large Passenger Capacity

A combination of speed and comfort in an incomparable degree, a boat to give the maximum amount of high speed service with minimum amount of attention.

The speed of a racing craft together with seaworthiness that makes safe the passage of the Southern Inlets.

In appearance, workmanship, and finish this mahogany boat is typically Sea Sled; no higher standard could be set. Make inquiry now; have one waiting for you at your Southern home.

The ability to carry weight at speed with perfect comfort and safety added to the weedless feature of surface propellers makes the Sea Sled the logical boat for your use, whether that use be commercial or pleasure. Powered Sea Sleds are available in all sizes and types, from the 24-foot standardized runabout to the large, fast cruisers and commercial craft.

A word from you telling your requirements will bring complete information and recommendation of the Sea Sled for your purpose.

SEA SLED DINGHY

In this, their first season, these smallest of the Sea Sled family have met with unprecedented demand and favor. Greatly increased production allows of prompt shipment from stock. Built in three sizes, 8'6", 11' and 13' in length, these boats excel for the yachtsman, vacationist, fisherman, camper, and for outboard motors. Complete descriptive and illustrated literature promptly and gladly forwarded on request.

The Sea Sled Company, Ltd., West Mystic, Conn.

Biscayne Yacht & Machine Works

Designers and Builders of

Pleasure Craft

Largest Marine Ways in Miami

Material and Workmanship Guaranteed

Machine Shop. Marine Supplies. Repairing

Let us figure on that new boat to be
Delivered this winter here in Miami
Ready for a strenuous season

Miami, Florida

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FOR YACHTS

THE HAGUE, Norfolk, Va.

Stop At FORREST & DUNN'S SHIPYARD
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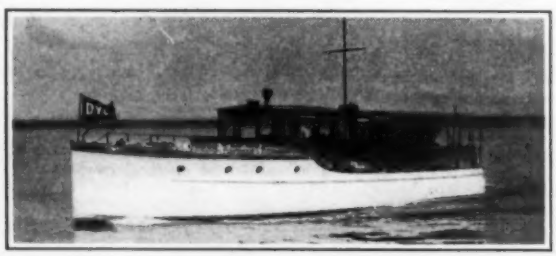
WATER, ICE, GAS AND SUPPLIES
ONE DAY LAUNDRY



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Cruisers of quality embodying exclusive features and refinements which make Rochester Cruisers so exceptional. 40, 45, 50, 55 and 62 feet in length.

ROCHESTER BOAT WORKS, Inc.
10 Charlotte Sta. Rochester, N. Y.

We Discover Pearl Islands

(*Continued from page 21*)

already discovered that I am as nervous as a wet cat when at a new anchorage, but she knew too that food goes a long way toward quieting my apprehensions. So, as the first drops of rain beat on the cabin roof we prepared for the storm.

Drawing back the hatch I glanced to windward and saw a dense wall of water bearing down upon us, intermingling with the frothy tips of bubbling whitecaps. The squall struck, and, snugged down though we were, we heeled over, the strong tide holding us beam on to the wind. Running forward, I touched the anchor line and felt in it the sickening lurch of a slipping hook. This was no time for eating breakfast when Hippocampus was dragging toward the beach, and with a word to Jo to make things shipshape below, I started up the motor and took the strain of the line.

Soon Jo, clad in oilers, joined me on deck. The sea was beating too heavily on the beach for voices to carry even the short length of Hippo's deck, and we took precious moments to concoct a system of hand signals that could be used in getting the anchor aboard. Then Jo took the tiller and I went forward. What with the lift of the bowsprit and the assistance of the motor the anchor came up easily, but getting it aboard was quite another matter. Once the water closed over my head as I lay on the deck reaching for a fluke, and as I came up for air I heard Jo's shrill injunction to hold on tight. Only the sound of her voice reached me, but I had a fairly definite idea of what she intended me to hear.

Signaling Jo to run with the waves for a bit I heaved the hook aboard and then, when we were perilously close to shore, found time to drop him into the cabin and regulate the running of the engine so that it might have power to push us into the teeth of the wind. Then, while the boat tossed and green water flushed her decks, we clawed off shore and in time shaped our course to round a point and find a much desired lee.

The town of Saboga, to which we now came, has an excellent harbor for the shallow draft, flat-bottomed boats of the islands. It is too shoal for Hippocampus with her deep keel, and as there is no alternative between too little water and too much, we anchored in six fathoms, well off the town but still with good protection. Going ashore in the afternoon, after a morning spent in desultory fashion, we hauled the dinghy up the beach, and climbed a crazy trail to the village.

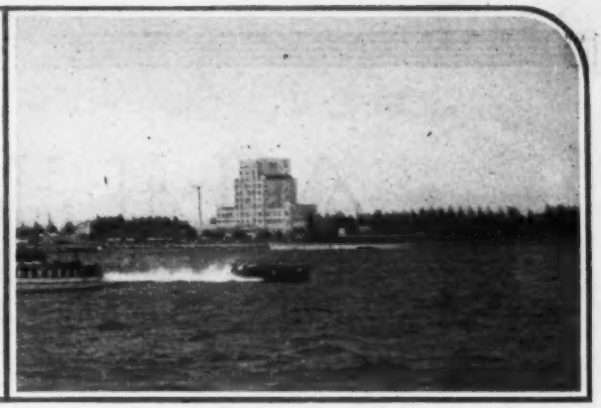
With no regard to symmetry or order, the fifty or more thatched huts of the village crouch between the two rounded hills on an elevation of a hundred feet above the sea. The doorless back door of this one yawns dingily within five feet of the front side of that one, and there's no telling which is back and which front. Built of split stalks of cane, with uprights at the four corners, and one or more supports in the center, the architecture of the dwellings is simple indeed. Yet there is skill employed in weaving together the thatched roofs of coconut leaves, and in binding sides and roofs with wisps of vine. Nature provides the floors of Saboga village, which are a hard reddish dirt, verging on mud in the rainy season.

The natives, a mixture of African, Indian, and Spanish, with the black blood in the preponderance, showed themselves to be friendly or apathetic. Observing our approach up the muddy trail from the sea, men, women, and children surveyed us idly until we had come close to, and then retired to the darkness within. With such an example of diffidence, Jo and I did not wish to be curious, and so took only sidelong glances within the huts as we climbed the hill to inspect the principal structure of the village.

This was a church of wooden stucco, with a small cross surmounting an abbreviated steeple. Shells of mother-of-pearl were inlaid in the stucco with some attempt at design, and the high note of ornamentation was achieved with a blue pattern dinner plate imbedded in the wall above the heavy front door. Near the church were the ruins of a stone building which dates from early Spanish occupancy of the site, and the church itself seemed only a few years behind its neighbor in dilapidation. Ignorant, illiterate, poverty-stricken and lazy, with occasional pearl fishing their only

(*Continued on page 82*)

Advertising Index will be found on page 122



Spend Your Winter at Miami Beach

NOW is the time to arrange for your winter vacation at Miami Beach. Instead of a short visit at the height of the season, build a permanent winter residence where you can enjoy the comfort and restfulness of your own home year after year.

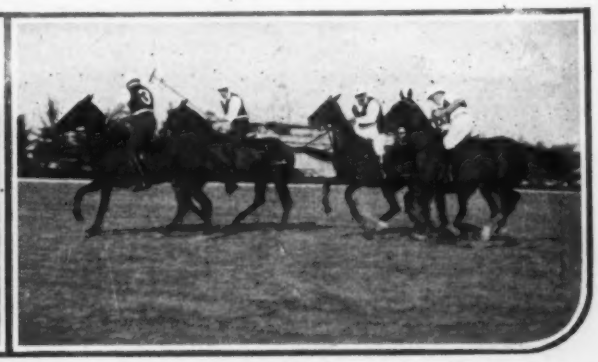
From a financial standpoint a residence at Miami Beach is an excellent investment because the city is growing rapidly in population and property values. But its greater appeal is the delightful climate, both winter and summer, and the unparalleled opportunities for outdoor recreation every day of the year.

Write for information about Miami Beach,—its sports, its hotels, its social life and its available residence property. You can purchase a site, have a house built under expert supervision and it will be ready for occupancy when you arrive.

Write for data to-day.

CARL G. FISHER MIAMI BEACH, FLORIDA

New York Office, Hecksher Building, 730 Fifth Ave.



ALLISON

The Power Plant for Express Cruisers

NO matter how skillfully a boat is designed nor how well it is built, its success as a boat is measured by the power and reliability of the motors with which it is equipped.

This is equally true of the least expensive runabout you can buy or of the finest motor yacht you can have built. But in the case of the larger and more costly boats a satisfactory power plant is especially necessary in order to protect the greater investment in the construction and fittings of the boat itself.

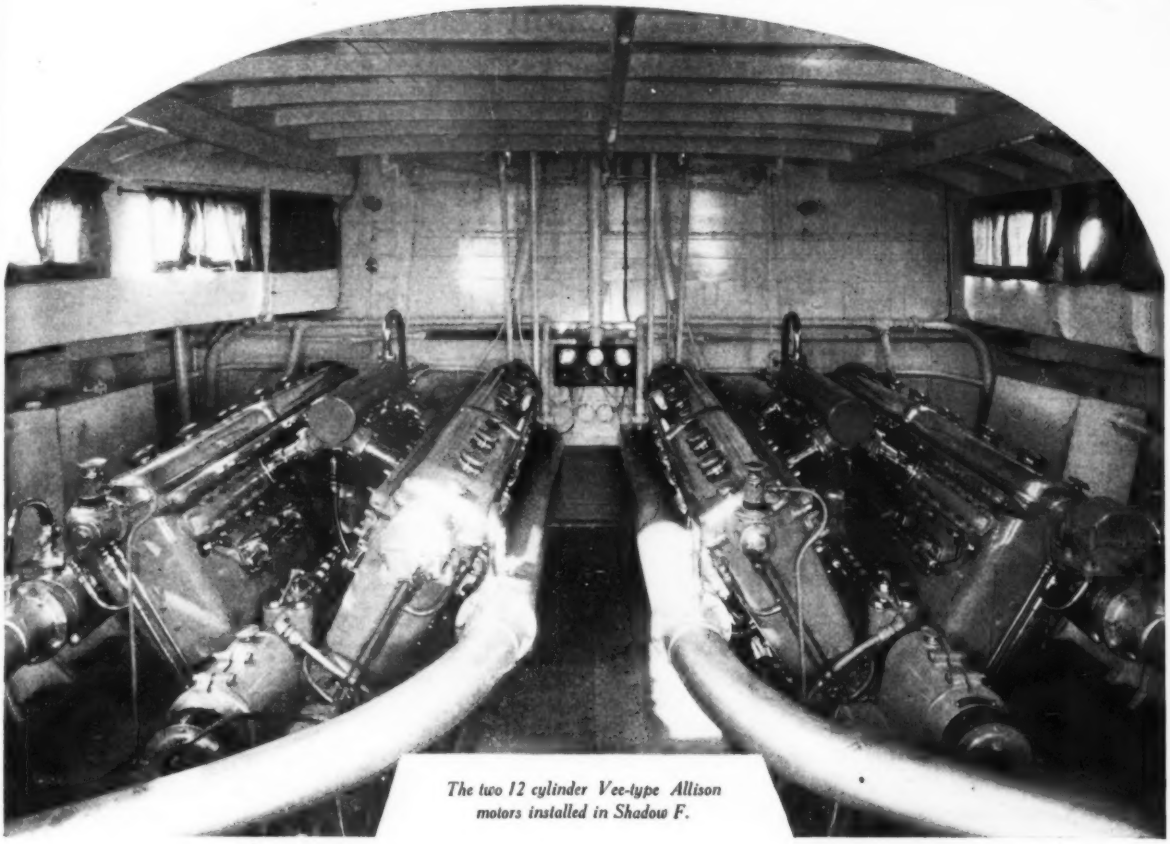
The size and speed of large runabouts and express cruisers has always been limited by the size and power of the largest high speed marine motors available. In producing the Allison we have advanced the limitations for these types of boats in both size and speed.

Carl G. Fisher's new "Shadow F" is the fastest express cruiser of its size ever built. Two Allison motors developing 425 H. P. each at 1500 R. P. M. give it a speed of 35 miles per hour. Not merely a burst of speed for occasional use but a practicable cruising speed which can be maintained hour after hour in any kind of weather.

Shadow F is not a skeleton racing craft, built to get the last possible mile of speed for its size. It is a substantially constructed cruising boat with every facility for comfort and luxury. Nothing has been sacrificed in weight, strength, accommodations, or seaworthiness. It is 72 ft. in length, 14 ft. beam and 3 ft. draft, with displacement of approximately 40 tons.

There are several 35 to 40 mile express cruisers in the 50 to 55 ft. class having 900 to 1800 H. P. per boat. Compare with these the 72 ft. Shadow F with 850 rated H. P. which drives her 35 miles per hour.

Shadow F built by Purdy Boat Company, Trenton, Mich., for Carl G. Fisher Twin-screw Allison motors.



The two 12 cylinder Vee-type Allison motors installed in Shadow F.

IT is not merely the liberal size of Allison motors that gives them their great power and endurance. It is their refinement of design and excellence of construction which have been carried out more consistently than in any other marine motor.

The best ideas of automotive construction were analyzed, coordinated and applied before the first Allison was built. Two years were devoted to conscientiously testing it in actual service before it was publicly announced. No effort has been spared to make it the best marine power plant that money and engineering skill can produce.

And now the performances of Allison motors in such boats as Shadow F, Sea Horse, Aye Aye Sir, and others, have demonstrated that all the care devoted to the development of the Allison is warranted by the results obtained.

Full details and specifications sent on request to boat builders and prospective buyers.

ALLISON ENGINEERING COMPANY

INDIANAPOLIS **INDIANA**

Third Race for Wood-Fisher Trophy

Detroit, September 1, 2 and 4, 1922

Three Heats of Fifty Miles Each.

FIRST HEAT .....

Boat	Owner	Time	M.P.H.	Lap	Lap	Finish
Baby Gar II	Gar Wood	1:07:27.11	44.50	3:16.59	45.8	1
Packard Baby Gar	J. G. Vincent	1.07:27:34	44.49	3:17.51	45.5	2
Wodfish	Edsel Ford	D.N.S.				

SECOND HEAT .....

Boat	Owner	Time	M.P.H.	Lap	Lap	Finish
Packard Baby Gar	J. G. Vincent	1.08.03.58			44.5	2
Packard Baby Gar	J. G. Vincent	1.08.03.58			44.5	2
Woodfish	Edsel Ford	D.N.S.				D.N.F.

THIRD HEAT .....

Boat	Owner	Time	M.P.H.	Lap	Lap	Finish
Baby Gar 11	Gar Wod	1.01.37.49	48.95	2.54.72	51.50	1
Packard Baby Gar	J. G. Vincent	1.41.02.45	30.0	3.20.00	45.oo	3
Woodfish	Edsel Ford	1.16.47.31	39.0	2.49.85	53.0	2

Wood-Fisher Summary

Boat	Owner	Total Time	Total Points
Baby Gar II	Gar Wood	3:17:07:06	15
Packard Baby Gar	J. C. Vincent	3:56:33.37	11
Woodfish	Edsel Ford	D.N.F.	4

Twentieth Race for A. P. B. A.
Gold Challenge Cup 3 Heats—30 Miles Each

FIRST HEAT

Packard Chriscraft	J. G. Vincent	44.47.75	40.2	3.37.22	41.4	1	13
Arab VI	R. Sidway	45.24.87	39.6	3.43.57	40.25	2	12
Baby Gar Jr.	Gar A. Wood	46.50.10	38.5	3.51.73	38.9	3	11
Zephryr	P. Strasburg	47.17.92	38.15	3.49.83	39.1	4	10
Bearcat Special	R. Locke	48.29.88	37.25	4.00.33	37.5	5	9
Redbird	W. Wood	49.13.27	36.6	4.02.62	36.1	6	8
Chriscraft	C. Smith	52.16.98	34.5	4.15.40	35.25	7	7
Bearcat Roamer	C. S. Morgan	52.35.04	34.25	4.16.11	35.1	8	6
Demon Bearcat	F. Ericson	53.21.35	33.8	4.23.60	34.2	9	5
Miss Mary	E. Grimn	1.02.06.81	29.1	4.05.44	36.7	10	4
Goldfish	E. B. Ford	D.N.F.	—	4.26.69	33.75	—	0
Bluebird	E. Gray	D.N.F.	—	3.52.61	38.75	—	0
Bearcat Bee	F. Bornman	D.N.F.	—	—	—	D.N.F.	

SECOND HEAT

Packard Chriscraft	J. G. Vincent	44.17.77	40.6	3.40.36	40.8	1	13
Arab VI	R. Sidway	44.18.90	40.5	3.38.94	41.0	2	12
Baby Gar Jr.	Gar A. Wood	53.23.51	33.75	3.52.64	38.75	8	6
Zephyr	P. Strasburg	D.N.F.	—	—	—	--	0
Bearcat Special	R. Locke	46.51.66	38.45	3.53.29	38.6	4	10
Redbird	W. Wood	46.31.07	38.65	3.48.68	39.9	3	11
Chriscraft	C. Smith	Called in				9	5
Bearcat Roamer	C. S. Morgan	50.99.69	35.25	4.12.19	35.7	7	5
Demon Bearcat	F. Ericson	50.43.06	35.4	4.12.18	35.7	6	8
Miss Mary	E. Grimn	D.N.S.	—	—	—	D.N.S.	0
Goldfish	E. B. Ford	D.N.S.	—	—	—		0
Bluebird	E. Gray	47.34.80	37.8	3.56.13	38.15	5	9
Bearcat Bee	F. Bornman	D.N.S.				D.N.S.	0

THIRD HEAT

Packard Chriscraft	J. G. Vincent	45.12.35	39.8	3.41.96	40.5	1
Arab VI	R. Sidway	48.40.13	37.0	3.53.39	38.55	4
Baby Gar Jr.	Gar A. Wood	D.N.F.	—	—	—	D.N.F.
Zephyr	P. Strasburg	D.N.S.	—	—	—	D.N.S.
Bearcat Special	R. Locke	46.37.67	38.65	3.51.50	39.	3
Redbird	W. Wood	45.53.77	39.35	3.46.60	39.75	2
Chriscraft	C. Smith	D.N.S.	—	—	—	D.N.S.
Bearcat Roamer	C. S. Morgan	50.37.79	35.40	4.11.95	35.75	5
Demon Bearcat	F Ericson	50.48.33	35.5	4.01.76	37.25	6
Miss Mary	E. Grimn	D.N.S.	—	—	—	D.N.S.
Goldfish	E. B. Ford	D.N.S.	—	—	—	D.N.S.
Bluebird	E. Gray					D.N.F.
Bearcat Bee	F. Bornman	50.55.29	35.45	4.11.83	35.75	7

Summary —Gold Cup Race

Boat	Owner	Total Time	Total Points	Position
Packard Chriscraft	J. G. Vincent	2:14:17.87	39	1
Arab VI	R. Sidway	2:18:23.90	34	2
Baby Gar Jr.	Gar A. Wood	D.N.F.	17	7
Zephyr	P. Strasburg	D.N.F.	10	9
Bearcat Special	R. Locke	2:21:19.21	30	4
Redbird	W. Wood	2:21:38.11	31	3
Chriscraft	C. Smith	D.N.F.	12	8
Bearcat Roamer	C. S. Morgan	2:34:12.53	22	5
Demon Bearcat	F. Ericson	2:34:12.74	21	6
Miss Mary	E. Grimn	D.N.F.	4	12
Goldfish	E. B. Ford	D.N.F.	0	13
Bluebird	E. Gray	D.N.F.	9	10
Bearcat Bee	F. Bornman	D.N.F.	7	11

Sallan Trophy Race for Cruisers
Three Heats—25 Miles Each

Boat	Owner	1st Heat	2 Heat	3 Heat	Pts.	Position
Tramp II	James Couzens	2:39:26.81	2:34:14	2:27.07	73	13
Idylese	Col. T. A. Duff	1:54:42.01	2:51:45	1:46.03	70	15
Ocoee	W. H. Hancock	2:18:43.01	2:17:52	2:15.17	94	2
Ebco	Harry Eberts	2:40:14.83	5:25:33	2:33.58	91	4
Valkyrie	C. C. Owens	2:54:26.37	2:18:28	2:35.52	70	16
Pidando	H. E. Gaddis	2:12:50.22	2:17:52	2:09.45	90	5
Pauline	Dr. O. T. Toepel	2:50:18.26	2:42:29	2:39.05	92	3
Miss Grosse Pointe	R. George Marsh	2:39:10.74	2:34:08	2:29.4	97	1
Pal	Theo. Schmidt	3:01:41.44	D.N.S.	D.N.S.	D. N. F.	
Gloria	F. E. Ellsworth	3:42:2844	2:39:17	2:34.06	89	6
Liggett	A. G. Liggett	3:12:25.58	3:23:41	2:52.45	86	7
Edith	William McCullough	2:37:01.27	2:34:28	2:36.11	72	14
Whitewood	Dr. A. R. Hackett	2:17:15.27	2:10:00	2:00.07	54	17
Namid	John B. Farr	2:35:20.74	2:27:13	2:20.31	81	9
Silverheels II	A. A. Schantz	2:24:27.07	2:14:46	2:12.57	75	10
Cresceus	Alexander McLeod	2:45:43.20	2:38:10	2:33.02	85	8
Keewatin	Landon & Gibson	3:20:09.62	3:18:28	3:02.38	75	11
Awandra	J. J. Miller	3:01:41.44	D.N.S.	D.N.S.	D. N. F.	
Breezo II	William Mielke	2:20:48.12	D.N.S.	D.N.S.	D. N. F.	
Tillamock	Geo. Jerome	D.N.S.	2:39:48	2:30.22	74	12

Commodore Charles W. Kotcher Trophy Race
Thirty Miles September 3, 1922

Boat	Owner	Elapsed Time	Position Won
Bearcat Pastdue	F. Haines	95:30.51	4
Snapshot	John Stroh	91:00.27	2
Woodfish	Edsel Ford	81:30.02	1
Bearcat Bee	F. Bornman	95:02.41	3
Bearcat Miss Pep	L. Mathews	96:83.33	5
Snap Jack	J. Kunsky	97:83.93	6

Detroit News Trophy Race
Twenty Miles September 3, 1922

Boat	Owner	Elapsed Time	Position Won
Bearcat Bee	F. D. Bornman	38:18.96	5
Demon Bearcat	F. C. Ericson	42:39.05	6
Bearcat I	R. Locke	43:27.27	4
Bearcat Pep	L. Mathews	38:27.17	3
Bearcat Past Due	F. Haines	38:18.71	1
Bearcat Snap Jack	J. Kunsky	38:22.56	2

Belle-Isle Boat & Engine Company Trophy Race
Ten Miles September 3, 1922

Boat	Driver	Time of Finish	Position Won
Bearcat Roamer	Mrs. C. S. Morgan	4:01.18	1
Demon Bear Cat	Mrs. E. M. Gregory	4:01:18	2
Bear Cat Bee	Mrs. L. H. Thomson	4:01:53	3

YACHT BUILDERS

THE facilities for yacht building afforded by the great plant of the Newport News Shipbuilding & Dry Dock Company are without equal.

We specialize in furniture, wood carving and decorating for yachts. We also have special facilities and skilled workmen for reconditioning and repairing yachts as well as larger vessels such as the S. S. Leviathan which is now undergoing reconditioning at our plant.

The location of our plant at Newport News on Hampton Roads gives us a harbor free of ice at all seasons and next door to America's favorite cruising grounds.

Dolphin-180 ft. Diesel Yacht

The furniture of Dolphin was built in our own shops.

NEWPORT NEWS SHIPBUILDING & DRYDOCK CO.

YACHT BUILDERS AND SHIPBUILDERS

Plant Located at Newport News, Va. on Hampton Roads

New York Office Woolworth Building 233 Broadway

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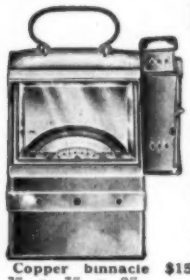
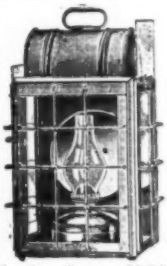


HEAVY COPPER BINNACLE Black Finish with Lamp Handle and Bracket Complete. Enameled white on the inside including 4-inch liquid compass made to Navy specifications and guaranteed perfect.

Copper binnacle $15
7" x 7" x 9"



Station Lamp $2.75
7" x 7" x 13"

Valued at $50.00 each, while they last, net price..... $15.00

STATION LAMPS, Suitable for Porches, Camps, Boat Cabins, or Yacht Clubs, complete with separate lamp that also has handle for removing.

All Brass—Valued at $13.50 each, while they last, net price 3.75
Galv. Iron—Valued at $7.20 each, while they last, net price 2.75

Solid Brass Liquid "FYR FYTER" Extinguishers, Approved by Board of Fire Underwriters. With "Fyr Fyter" on an automobile, insurance companies allow 15% reduction on your premium.

Complete with Bracket—Valued at $9.00, while they last, net price 3.95

PURE MANILA ROPE, Navy inspected and Perfectly Clean and New.

Value per foot $.09, net price..... .05

Fyr Fyter $3.95

KAPOC LIFE PRESERVERS. Govt. Inspected. Jacket or overhead type.

Valued at $5.00, while they last, net price $1.25

Be sure to pay us a visit as the above are only samples of the bargains during our

24th Anniversary Sale

E. J. WILLIS CO.
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NEW YORK CITY

Dealers: Write for Complete List of Navy Specials with Quantity Prices.

½" Value per foot $.07.....$.04
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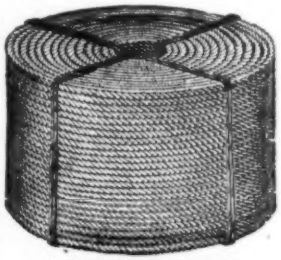


¾" Manila Rope 5c ft.

SILENCE your MOTOR EXHAUST

without loss of power from BACK PRESSURE

The Tvedt Adjustable Marine Muffler will do this.

Adjusted with the motor in actual operation.

Motor Tests have conclusively shown absolutely no loss of power or speed when using this muffler.

Write for Descriptive Catalog and help to eliminate in your harbor the nuisance of motor exhausts.

Built in sizes for 1½ to 5" exhaust connections.

TVEDT-SMITH CO. **Worcester, Mass.**
New York Office, 103 Franklin St.

Canadians Hold Race Meet

(Continued from page 24)

two or three straggling in at the finish, but unfortunately the public and the greater proportion of yachtsmen—or even those interested in racing, do not take that same view seriously. On the other hand, they consider a race a joke unless there is real competition from start to finish. However, as we were saying, this year's race was a race—if there ever was one—from a spectators' standpoint, at least, and we understand that the drivers themselves were not limited to a single thrill.

Hamilton did itself proud with everything connected with the races. Of course Commodore Harry Greening was the chief producer of spirit—both figuratively and literally speaking. He consistently refrained from making a ruling or offering a suggestion or an opinion which would in any way mar the sportsmanship methods which were followed by everyone having anything to do with the races. He and Mrs. Greening were hosts to all the visiting yachtsmen and if there were any, the protests were not put in writing. Commodores Charles Pook, Samuel Vila and D. P. Brown were a mighty committee which handled all the details from A to Z with perfect precision. Jack Elliot in charge of the Patrol, George Hancock at timing, R. M. Dewhurst, George Hancock, Arch Robertson, D. F. Griffith, Robert Wells and many others were on the job all the time and could not have possibly performed their work better had they been doing it for years and years.

Before the first race started, the committee saw to it that all the rules were complied with by all the contestants. The affidavits swearing that each of the motors were stock and designed and built for marine purposes, were all filed with the committees so the latter had no alternative but to accept the statements as true and rule that all requirements of the rules had been complied with.

No sooner had they done this than a representative of Nick Nack and Miss St. Lawrence handed a communication to the Race Committee, protesting the entry of Baby Gar III and Packard Baby Gar as not being equipped with stock marine motors. As no proof or evidence was presented with the protest, the Committee was obliged to allow both protested boats to start and as results later showed they finished in first and second positions respectively, by a large margin. Later the owners of the protested boats also filed protests against all the other boats alleging that many technical features of the rules had not been complied with by them, so, as the matter stands today, all boats are protested and the Canadian Government is holding the Cup for payment of duty. The President and Council of the American Power Boat Association will appoint a special committee to hear evidence of all parties and it will make a final ruling which should be basic and something on which to work in all future races for this valuable trophy.

Most of the boats were approximately 32 feet on the water line, a minimum size craft which the rules permitted to enter. Rainbow II and Baby Gar III were each equipped with two motors, while all the other boats were single engine installations. Rainbow II was driven by twin screws, while Baby Gar III's two engines were geared through a common gear box to one propeller shaft.

Rainbow II had the same hull which raced last year at Buffalo, and failed to give a very good account of herself. However, in the 1921 races, Rainbow II was fitted with surface propellers while this year, her owner has substituted submerged propellers and there appears to be very little difference in the performance of the boat this year from what it was last, although her turning qualities seem to be somewhat of an improvement this year. Rainbow II is powered with two Type G-R Sterling motors.

Nick Nack, owned by Humphrey Birge of Buffalo, is a Hacker designed and built runabout which was constructed last year for the Fisher-Allison Trophy races but not completed in sufficient time to compete. Her power is a six-cylinder Hall-Scott marine motor, developing in the neighborhood of 200 h.p.

Miss Peerless II, the runabout owned by Edward Grimm of Buffalo, is powered with a twelve-cylinder 5 x 7 Peerless motor.

Both Miss St. Lawrence, owned by Dr. G. H. Stephens, and Ionic III, owned by Colonel T. A. Duff, are Crouch designed boats, very similar to Rainbow I which twice won the Fisher Trophy. Ionic III was built by Ditchburn, and Miss St. Lawrence by Cuppernail. Both of these boats were large, husky runabouts, well built to stand any kind of a sea and the exact type of boat which was intended to be developed when the Fisher-Allison race was first suggested. In the rough water in which the boats competed on the second day, both Ionic III and Miss St. Lawrence performed well and made practically the same speed as on those days when the water was less rough, while the speed of the other contestants fell off. Both Ionic III and Miss St. Lawrence were powered with one six-cylinder Type G-R Sterling motor.

(Continued on Page 76)

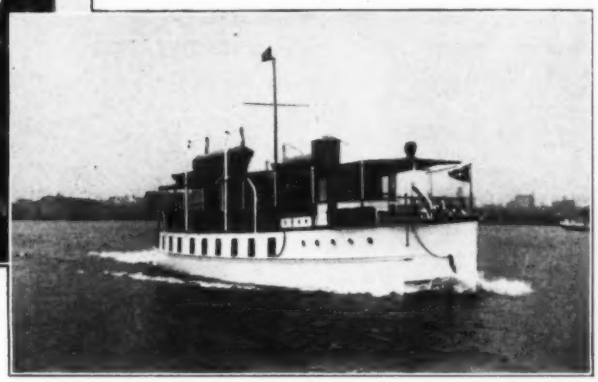
MATHIS YACHT BUILDING CO.

One Constant Keynote—Comfort

87 ft. Houseboat "Pilgrim"

Mathis-built for Mr. William M. Elkins, Phila.

THE utmost in home comfort, in a palatial boat of exceptionally yachty lines. Owner's quarters, aft, have three double staterooms, one single stateroom, two complete bathrooms with showers and one separate day toilet. Large pantry, galley full width of boat and crew's quarters for six men, provide in all ways for long cruises.



OF course, in all Mathis-built Houseboats of whatever type, there is always found maximum economy of operation along with absolute seaworthiness, both of which spring directly from right designing and the perfect and efficient execution of each design at the hands of our master craftsmen. But in addition, there is another notable attribute common to all Mathis-built craft—that's comfort.

Whether, it be in an 87-ft. houseboat like the "Pilgrim" (above) or a 39-ft. auxiliary sloop like the "Nedmac" (below) our unvarying Keynote of Comfort is never overlooked on

MATHIS-BUILT HOUSEBOATS

Cruisers and Auxiliaries

Comfort of the solid, satisfying kind that comes with spaciousness that would even be surprising in boats of 30 per cent to 40 per cent greater length.

Comfort that breathes from tasteful, luxurious furnishing, beautiful interior trims and that completeness of modern up-to-the-minute conveniences that has played a prominent part in the present high reputation of every Mathis-built boat.

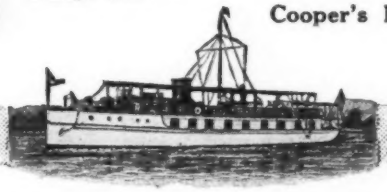
Auxiliary Sloop "NEDMAC"

Over all length 55 ft., 6 in. Water line length, 39 ft. 15 ft. beam, draws 3 ft. An ideal combination of sail and motor power for cruising anywhere. Combines speed and safety with economy of operation—can be handled by a single hand.

MATHIS YACHT BUILDING COMPANY

Specialists in Houseboats and Cruisers from 40 to 120 feet.

Cooper's Point Camden, N. J.



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With Bronze Gears

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The Curtiss line is exceptionally complete, varied in type, size and price to meet every possible requirement. Each model has been designed in accordance with our wide experience in boat work and can be depended upon in quality, service and durability no matter whether it is our highest or lowest priced model.

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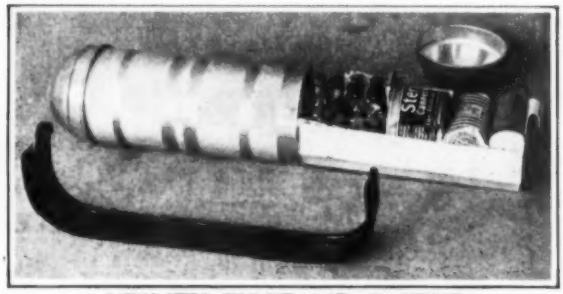
18" x 18" x 11"

The best little closet on the market today, possessing many of the advantages of the large size toilet. All brass and porcelain. Oak seat and cover.

THE J. H. CURTISS CO.
2 South Street, New York



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ELASTIC SEAM COMPOSITION TRADE MARK

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Canadians Hold Race Meet

(*Continued from page* 74)

Baby Gar III and Packard Baby Gar are 32 footers, built by Gar Wood, Inc., of Algonac, Michigan. Both these hulls were well designed and built and went through the 150 miles of racing without any ill effect whatsoever. Baby Gar III, as mentioned above, is powered with two six-cylinder Fiat marine motors, using a single propeller. Packard Baby Gar is powered with a twelve-cylinder V-Type marine motor with a bore of five inches, and a stroke of five and a quarter, giving a total piston displacement of approximately 1237 inches.

The weather conditions on the three days on which the races were held, were what might be called ideal racing weather for the kind of competition which was sought. The water was either choppy or rough all the time. It was hard on the drivers or mechanicians but gave the spectators a thrill a minute which was what they came for; not to see this or that boat or engine triumphant, although we will admit that when Rainbow II went down and out on the second lap of the second fifty mile heat, the crowd diminished perceptibly.

Hamilton Harbor is an ideal location for a race course. As the course was laid out, any wind from Lake Ontario, that is east of north and south, would result in absolutely quiet water. The greatest exposure is from the west and the maximum distance there, is hardly four miles, so except in rare instances, the bay is very quiet. As fate would have it, the wind was from the west on all three race days and on the second, it reached a velocity of perhaps thirty miles an hour. This made going decidedly dusty but as the rules say no postponement, no postponement it had to be.

It will be recalled that the rules governing the Fisher-Allison Trophy call for three fifty-mile heats, with no repairs between. After the finish of one heat the boats are put in charge of an observer, locked up and only returned to the owners fifteen minutes before the start of the next heat. This feature is supposed to develop reliability and freedom from repairs and adjustments. Thus the race is really one heat of 150 miles.

Seven boats started in the first heat. This in itself is a record, the nearest approach to which was at Buffalo last year when six started the first day. Six boats started the second day and five the third—a total of eighteen. Sixteen started at the Buffalo races. Of the eighteen which started at Hamilton, sixteen of them finished, while at Buffalo only nine finished so this kind of an analysis proves that both boats and engines have improved in a year's time.

When the gun sounded for the start of the first heat, the only one to make a good start was Colonel Vincent, driving his Packard Baby Gar. He got over the line only 5 seconds late although he was driving his first motor boat race. The others came over anywhere from 8 seconds to 1 minute and 4 seconds late, the worst start being made by Gar Wood himself at the helm of his Baby Gar III. It was soon quite evident that Packard Baby Gar was very fast. She seemed to leave the rest of the field from the start except Baby Gar III which soon set out to close the gap between her and the leader. At the end of the first lap Packard Baby Gar lead Nick Nack by 10 seconds; Miss Peerless was second; Miss St. Lawrence was third; Ionic III close behind, followed by Gar Gar III and Rainbow III trailing.

At the end of the tenth mile, the times and orders were as follows: Packard Baby Gar 15:14; Baby Gar III 15:57; Nick Nack 15:51; Miss St. Lawrence 16:02; Miss Peerless 16:33; Rainbow II 16:34; and Ionic III 17:14.

The relative positions did not change greatly as the race proceeded. Occasionally, two boats would change their relative positions but it was not for long. At the 20th mile, Packard Baby Gar was still leading, being clocked at 30:21; Baby Gar III followed at 31:06; then came Miss St. Lawrence at 31:19; Nick Nack at 31:36; Rainbow at 31:53; Miss Peerless II at 32:15 and Ionic III at 33:54. The leader had averaged 39.6 for her first 20 miles.

The relative positions of the boats did not change materially until the 38th mile when Baby Gar III caught Packard Baby Gar. From this point on, first one boat and then the other would take the lead until the 47th mile when Baby Gar spurted and finished the 50 miles in 1 hour, 14 minutes, 2 seconds,—eight seconds ahead of Packard.

Interest in the race was not confined to the two leaders for the third and fourth boats, Rainbow II and Miss St. Lawrence were having a race all of their own. Up to the 46th mile, Miss St. Lawrence lead, but at this point, Rainbow II took a 4 second lead but at the finish Miss St. Lawrence had cut 2 seconds off this and finished only 2 seconds behind Rainbow II. Nick Nack was fifth, Miss Peerless in sixth position, and Ionic III, seventh.

Baby Gar averaged 40.5 miles per hour for the fifty miles and made her best two mile lap at a speed of 46.5 miles per hour. (A complete summary will be found on page 62).

(*Continued on page* 80)

V3 4 10 1

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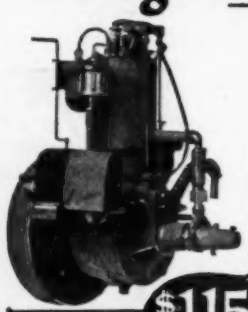

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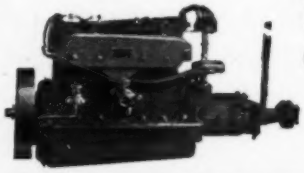

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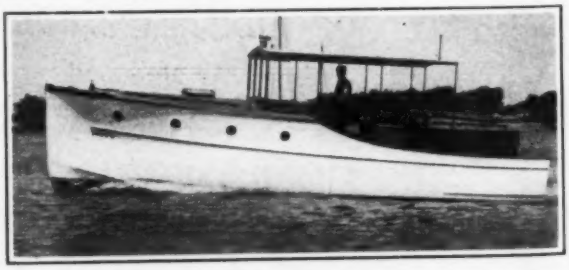

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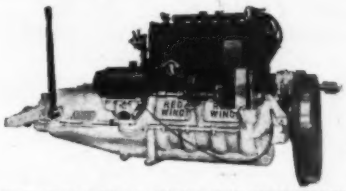

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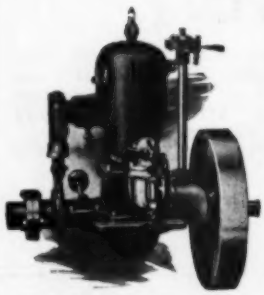

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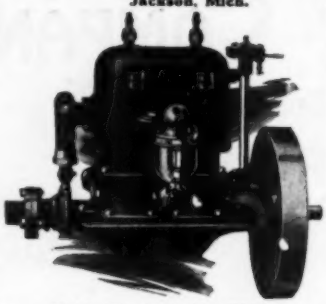

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Canadians Hold Race Meet

(*Continued from page 78*)

Shortly before the start, Hamilton Bay was fairly alive with white caps and all present knew they were in for many a thrill. As was the case in the first heat, Packard Baby Gar made the best start. Rainbow II followed one second later, followed by Miss St. Lawrence, Nick Nack, Ionic III, and finally Baby Gar III which drew up in the rear 42 seconds after the gun.

The order of star did not stand long. Miss St. Lawrence immediately went out into the front and astonished everyone by her sea-going qualities and the excellent weather she was making in spite of the big sea running. Rainbow II made a poor turn at the first buoy, of the second lap, being practically in last place as she rounded but immediately set out at railroad speed to catch the leaders. The way she gained in the next half mile demonstrated that it would be a great race and that Rainbow was to be a contender. She was leaping and jumping from wave to wave and at times appeared to be fully ten or fifteen feet in the air. However, just a half mile of this was enough for Rainbow, for she then took one bound larger and higher than any of the others and when she landed, one of the motors kept on going toward the bottom of the lake and Rainbow was out of it for all time. Miss St. Lawrence continued in the lead with Baby Gar III exerting every ounce of speed she had to catch her.

The first lap of two miles was made by Miss St. Lawrence in 3 minutes and 18 seconds, which is at the rate of 36.3 miles an hour, a remarkable performance considering the bad weather conditions. Miss St. Lawrence lead Nick Nack which was running second, by 35 seconds at the end of the first lap. Packard Baby Gar came along 5 seconds later; Baby Gar III, 1 second behind her, and Ionic III, only 3 seconds behind. Miss Peerless II did not start.

At the end of ten miles, which was covered by Miss St. Lawrence in 16 minutes, 25 seconds, she was still leading the field by a considerable margin. Baby Gar III had gone into second place, but was over a minute behind the leader. Ionic III was third, Nick Nack, fourth, and Packard Baby Gar way astern.

At the ten mile point, Miss St. Lawrence still lead but her lead was cut down to the margin of a minute and 3 seconds of Baby Gar III. Ionic III was third, Nick Nack fourth, and Packard Baby Gar last.

From this point, Baby Gar III began to gain on the leader. At the end of the eighteenth lap, she was only 2 seconds astern. On the nineteenth lap, Baby Gar III went into the lead which she held at the finish, beating Miss St. Lawrence to the line by 9 seconds. Nick Nack finished in third place, Ionic III in fourth, and Packard Baby Gar last. (A complete tabulation of the results will be found on page 62).

For the third and last heat, the field was diminished to five boats. The weather on this day was still unsettled and squally. At times, the lake was fairly smooth while at others during the race, it became choppy.

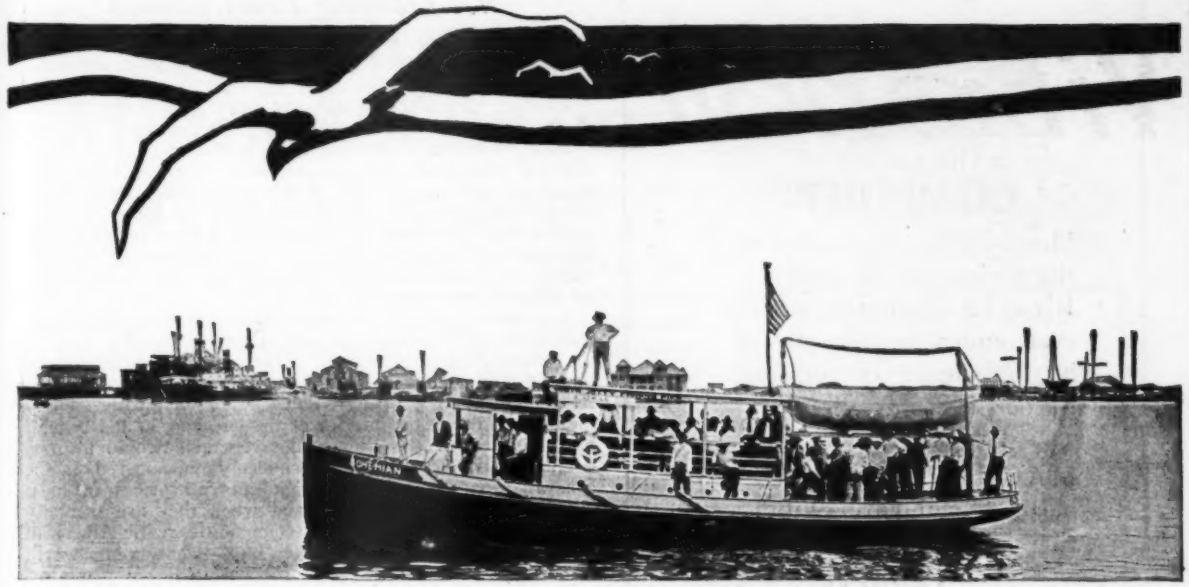
At the start of the third heat, Packard Baby Gar for the third consecutive time got over the line first from a standing start, being only 2 seconds late. Miss St. Lawrence was only 2 seconds behind her and it was obvious from the starting gun that there was to be a real race between these two boats as second place was yet undecided and each of these two boats had a chance for this position depending on how they finished on the third day. Nick Nack, Ionic III and Baby Gar III, all made good starts in the order given.

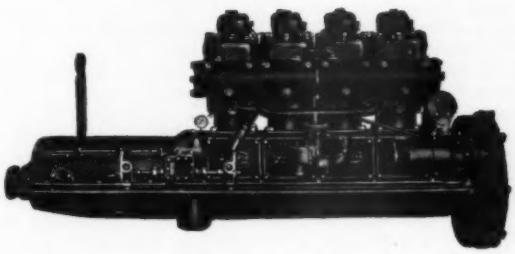
At the end of the first two mile lap, Packard Baby Gar held a commanding lead of 11 seconds over Miss St. Lawrence. Baby Gar III was only 3 seconds astern, followed closely by Nick Nack and Ionic III. Packard Baby Gar held the lead until the thirtieth mile when she was passed by Baby Gar III. On the next lap, Miss St. Lawrence also went ahead of Packard Baby Gar and it appeared for a time that the second place in the race would go to Miss St. Lawrence. She was a decided favorite, but the skill of Colonel Vincent, who was at the helm of Packard Baby Gar, soon overcame some mechanical trouble that the engine in his boat was having for the first time and in the forty-fifth mile, Packard Baby Gar again passed Miss St. Lawrence, who, at this time, seemed to be having engine trouble. A short time later, Miss St. Lawrence accepted a tow and left the course, being put out of the race by a broken piston pin, due to a flaw in the forging. Baby Gar III continued to gain, and finished the fifty miles in 1 hour, 12 monutes, 13 seconds, which is at the rate of 41.3 miles an hour, a new record for the Fisher-Allison race. The best two mile lap made by Baby Gar III was at a speed of 42.8 miles per hour, another record.

Ionic III finished the race in second place followed by Packard Baby Gar and Nick Nack.

On points Baby Gar III took the race by a large margin, being credited with 21 points. Packard Baby Gar was second, and took 14 points; Nick Nack received 12; Ionic III, 11, Miss St. Lawrence, 10, Rainbow II, 5, and Miss Peerless II, 2,—all, of course, subject to the decision of the protests previously mentioned. (A complete summary will be found on page 72)

Advertising Index will be found on page 122





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It can be eliminated, wherever and whenever caused by unbalance of rotating parts.
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Write today for catalog and prices

Syracuse Gear Co.
Syracuse, N. Y.

We Discover Pearl Islands

(*Continued from page* 68)

industry, the primitive natives of Saboga have little use for religion or its temple.

Walking carefully through the slime of the only street to the other, or northern hill, we intercepted an English-speaking inhabitant who had already visited us aboard and asked if there were any eggs for sale. There were, he told us, at ten cents apiece, and as this price seemed dear on an island where money rarely circulates, we thanked him and walked on. The peak of the other hill, close to where the encroaching vegetation hems it in, is occupied by two detached huts, and from one of these we were hailed with an offer to sell mangoes.

Approaching, we saw a squat, chunky negro, with a curly stubble of beard around his smiling mouth, holding four of the yellow fruit in his hands. They would be twenty cents, he said, and when Jo protested that they were too expensive, I asked for plantains. These were immediatley forthcoming from the dark interior of the hut, and, lo and behold, half a dozen of the banana-like vegetable would also be twenty cents, *plata.* *Plata,* I suddenly remembered, is the Spanish word for silver, which cuts all prices in half. Figures are given in silver, and when they are mentally divided by two, one pays for commodities with American money, or *oro* Hence, one dime buys twenty cents worth of mangoes and another pays for half a dozen plantains, while a photograph of the vendor, squatting by his fire, comes free.

Returning to the center of the village we again asked for eggs, since they were to cost but five cents "gold" apiece, and were directed to a hut, within which sat a long-armed, cadaverous negress. At our knock she arose from the floor where she had been sitting in friendly fashion with the family pig and spoke a word of inquiry.

"Huevos," I said, *"Tienes huevos?"*

The pig, which was tethered by a leg to keep it from joining its forest relatives, or, perhaps, to prevent its adoption by less fortunate neighbors, rose clumsily at the sound of my American accent, and attempted flight. The woman, with a deft kick of a bare foot, quieted the household pet, and then, with a sibilant *si si si* to me, she raised a cloth curtain and entered a bedchamber. Chickens, cats, and dogs wandered amicably about in the living room where Jo and I stood waiting, but it was evident that the hens performed their domestic duties in the modest seclusion of the bedroom. They had not been doing very well that day, however, for a diligent search in every corner and behind each box brought to light only two eggs. These we took in exchange for another dime, and backed out of the house, murmuring thanks.

For feminine readers I might attempt a description of the afternoon clothes worn by this lady of Saboga, if my attention had not been so firmly fixed by another detail. The lady, who had left many Panamanian summers behind her, possessed three handsome teeth, and by a peculiarly provision of Providence, two of these were in the upper jaw, with a gap between, and the third was in the lower, filling the gap. Between, or among, these jagged dentals, was held the butt of a cigarette, so short that the smoker was obliged to keep her lips back in a fixed grin. How she contrived to puff the tobacco with lips apart I am unable to explain, but puff she did, and as she spoke smoke issued from her nostrils.

At the front door of her home, where we stopped to photograph a man who was grinding wheat in a wooden mortar, this smoke-consuming dragoness met us triumphantly with another egg, and when we had added it to our collection we returned aboard. On the way, however, we were hailed from a native schooner that lay aground across the harbor bar.

"Compra bananas?"

Yes, we would buy bananas, and we rowed alongside for a close view of a Panamanian merchant vessel. When afloat, she drew about three feet of water, and she measured thirty feet in length. There appeared to be a shallow cabin aft and a cargo hold forward, and immediately abaft the

(*Continued on page* 86)

Advertising Index will be found on page 122

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The Spinaway is always "raring to go". Starts at the first spin of the crank and gives a steady flow of power that makes motor boating a real joy. Superior grade of materials and workmanship makes the Spinaway easily portable, yet sturdy and reliable. The safety tilting feature relieves you from worry over obstructions in the water. The adjustable propeller shaft enables you to put the propeller at just the right depth in the water to obtain maximum power regardless of the height of boat stern.

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"I have been using a Spinaway Motor for six years on my vacations through-out Michigan and Canada and it has certainly proved to be a dependable little outfit."
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"I wish to express my satisfaction as to the performance of the Spinaway Motor which I bought from you. It is easy to start, runs smooth and has proven equal to any of the outboards."
E. B. Ill.

"I received the motor yesterday and gave it a try out. It runs like a top. Am very much pleased so far and had many admirers already."
J. E. Pa.

"Tried the motor out Sunday and it is all that you claim for it. In fact it has more power and speed than the ——— or ———."
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Names of parties giving these voluntary testimonials will be supplied on request.

Spinaway Detachable Rowboat Motor

New Reduced Prices

$70.00 for Battery Ignition Type

$80.00 for Magneto Ignition Type

This is the identical motor that has been selling for $90 and $95. We build but one Spinaway Motor and put in it only the highest grade materials and workmanship. Increased production and new manufacturing costs now make possible these new low prices. It makes the Spinaway unquestionably the best value on the market.

A Real Guarantee

We unreservedly guarantee Spinaway performance and stand solidly behind every detail of its make-up.

All Spinaway parts are interchangeable and we will replace free of charge any part which develops a defect due to faulty material or workmanship, or from any cause other than ordinary wear, neglect or abuse, provided such part is sent back to us transportation charges prepaid.

We are able to make this offer because in quality of materials, in character of construction and in perfection of mechanical adjustment, the Spinaway Motor is only approached in the very finest of Marine Engines.

Dealers We have an interesting, liberal sales plan. The market for outboard motors has only been "scratched." The Spinaway will meet any competition—price within reach of almost everyone. Your investment is small. Write for sales plan to-day.

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Books of Plans of Cruisers, Runabouts, Auxiliaries, and Dinghies

THE BEST HOW TO BUILD SERIES EVER PUBLISHED

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This volume describes in detail how to design a motor boat. It also contains complete plans of 30 Cruisers, Runabouts and Auxiliaries. The plans include lines, table of offsets, interior plans, profiles, construction details, etc. There is no book published at the present time which describes in everyday language the details of designing a boat according to your own tastes. The plans of Ideal Cruisers, Runabouts and Auxiliaries are complete in every particular. They include the best of the plans published in MoToR BoatinG during the past several years. The plans include boats of from 20 feet in length up to 40 feet. The drawings are all to scale and large size.

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Price of all four books of Ideal Series (Vols. 1-4) if ordered together **$6.00**

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Piloting, Seamanship and Small Boat Handling

By Charles F. Chapman

This book has been published in response to repeated requests for us to bring out in complete book form the wonderful illustrated course in Piloting, Seamanship, and Small Boat Handling which has been appearing regularly in the issues of MoToR BoatinG since February, 1921.

Profusely illustrated with nearly 300 Cuts and Diagrams.

MoToR BoatinG's Correspondence Course proved to be the most successful and most popular feature ever undertaken by a boating magazine. Thousands of readers became better boatmen by studying this course. Now you will want it in permanent book form to keep aboard your boat for reference and guidance.

This course was prepared with an entirely new idea in text book or correspondence instruction. Instead of page after page of dry text matter with only occasional illustrations, it is composed mainly of pictures, drawings, photographs, charts and diagrams covering every situation and every point, with the purpose of each picture clearly explained by a concise and simple title.

You will find this book more enjoyable and easier to understand than any text book you ever read. You will find it correct and authoritative because it has been prepared by experts with years of boating experience and every necessary reference at hand.

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Foreign Postage $1.00 extra.

Note:—Volume V is not sold in combinations with the other books of Ideal Series.

MoToR BoatinG, 119 W. 40th St., New York, N. Y.

Advertising Index will be found on page 122

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There are other good reverse gears but there is no other gear with the MULTI-CONE CLUTCH, an exclusive Standard feature. Therefore no gear can equal the Standard because there is no clutch to equal the Standard MULTI-CONE.

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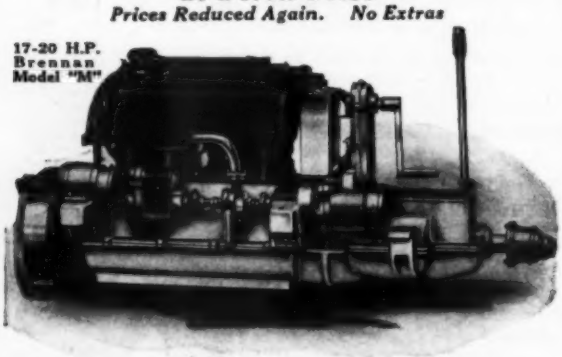

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Order quick if you want early delivery.

BRENNAN MOTOR MFG. CO.
500 East Water St. Syracuse, N. Y., U. S. A.
Cable Address: "Binot"

We Discover Pearl Islands

(*Continued from page* 82)

foremast was a box containing the galley stove. A large and plump negress—almost the only island woman we have seen who was not built on lean, racy lines—stirred a pot with a wooden stick and surveyed us goodnaturedly. Slouching on the deck in various stages of undress were six men, while sitting aft were two women, busily engaged with the heads of two pickaninnies. All seemed very much at home aboard the schooner, but whether they constituted a large family or a houseboat party we were unable to decide.

Having been at close quarters, ashore and afloat, with the natives of Saboga, we were glad to return to our clean, trim Hippocampus. She swung demurely about her anchor, as if contemplating some innocent deviltry. As she was a victim to a conflicting wind and current, we turned in that night certain that the morning would show damage to her manilla line. It did, thanks to a breeze in the small hours and shell-covered boulders on the bottom; and when we got under way in the morning we were full of determination to sail until we had found the ideal anchorage.

We were two nights out, and at our two moorings we had dragged anchor and chafed the line. The next harbor must be rock-free and protected from southeasterly squalls. So, eating breakfast on the way, we took advantage of a favorable slant and sailed in the direction of Pedro Gonzales Island. As it loomed indistinctly through the morning haze it looked like the promised land, and, according to chart and coast pilot it possessed a certain Perry Bay which was protected by outlying islets from all winds.

Here, after five hours of perfect sailing, we let go anchor. Around us the shore stretched in a friendly semicircle, the tom, and to northward Senora and Senorita Islands seemed to shield us from such an unusual and unexpected affair as a northwesterly wind.

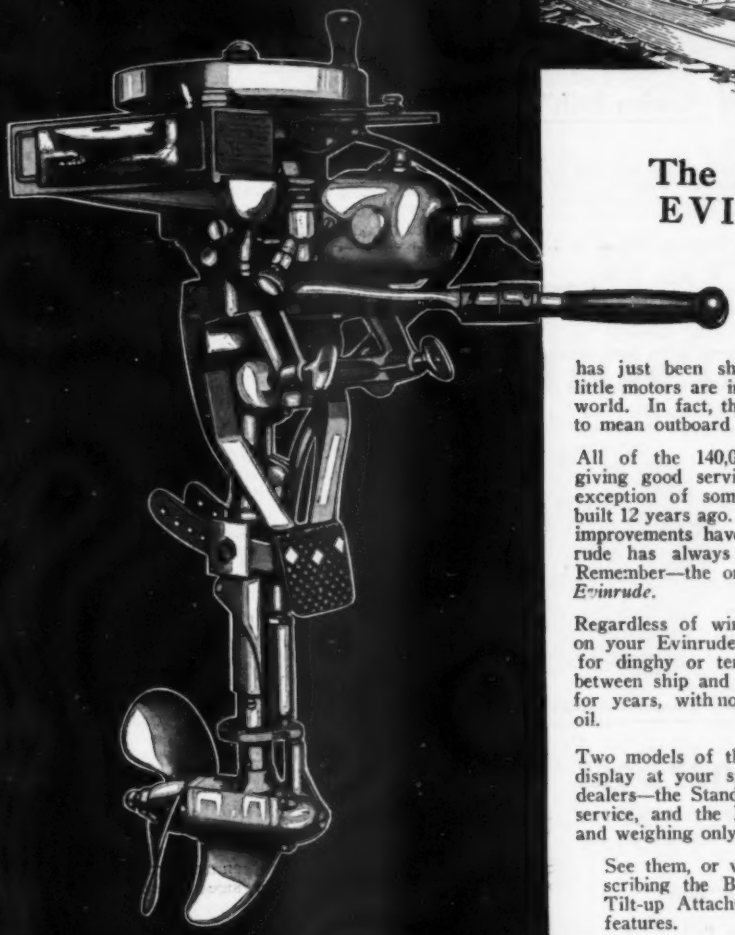
But that night the season changed unreasonably from wet to dry and brought a clear sky and a boisterous northwester. There was no danger of dragging in that bottom, but under the influence of the waves which sprang up at dusk the poor little Hippo did everything on the calendar except loop the loop. Pots and pans rattled in the galley until they were silenced one by one, the rigging hummed and whistled, and the drinking water in our tanks splashed and pounded so that sleep was almost impossible.

By daylight we had come to believe that a quiet anchorage in the Pearl Islands was unknown. Nevertheless, we were under way at seven, still looking for it. The wind holding, our best guess seemed a deep bay on the southwest side of the same island, and thither we sailed, rounding Gonzales from the eastward, and beating as we passed its southernmost point. For diversion I trailed a fishline astern, and tended it with some persistency for an hour. Then, as the fish seemed indisposed, I secured the line with two round turns about a towing bitt and two half hitches, and went below to shave, Jo meanwhile sailing the boat. In that moment of inadvertence, a fish struck and carried away hook, spoon, line, and half hitches. I am surprised that he left the towing bitt, for he must have been a big one.

Other troubles developed immediately, for, search shore and chart as we would, we could not seem to identify our bay. There were headlands and points in plenty, but nowhere was there anything that answered the description of a harbor. Finally, finding tacking a slow business, we doused sail and started the motor to skirt the beach and search more conscientiously.

Half an hour of this and still no harbor. Then another ten minutes and up popped the familiar (familiar to the point of boldness) shore of Senora Island. We had nearly circumnavigated Gonzales Island, and Jo had nearly lost her regard for me as a navigator. This inability to find a bay a mile deep and half a mile wide was too distressing for words—for words, at least, that I could employ with my present crew—and we turned around and retraced our course. Taking a departure from an unmistakable reef near our turning

(*Continued on page* 90)



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No batteries or extras to lug. Has Quick Action Magneto—real carburetor—spark and throttle control like auto. Instant reverse, take-apart feature, self-tilting and self-righting propeller with protecting skeg. The sensation of the year. Write for Free Illustrated Folder.

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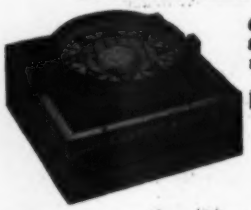
should be the best obtainable. For seventy years Ritchie compasses have been the choice of experienced navigators.

Select the Ritchie for your boat.



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PEERLESS Marine Motors have proved it isn't necessary to pay a fancy price to get a satisfactory power plant 5 to 50 H.P. for medium and heavy duty, suited to all types of boats. You will find them in classy runabouts, in big cruisers and hard working fish boats.

Let us tell you the size, power, dimensions and price of the Peerless most suitable for your boat.

Write to-day for latest catalog, giving dimensions and details of your boat.

Peerless Marine Motor Corp.
2160 Niagara Street Buffalo, N. Y.

Irene A 28 Footer

(Continued from page 34)

flow fitting through the side of the hull. A connection of rubber hose will allow flexibility. Gasoline piping is to be made up with ⅜-inch copper tubing with regulation S. A. E. connectors. There will be a ⅜-inch valve at the tank and tubing through a strainer to the carbureter. A shutoff valve may also be installed convenient to the operator. An air line of 5/16-inch tubing with the same type of fittings should extend from an air pump on the motor and an auxiliary pump on the dash to the tank. A vacuum system will operate very satisfactorily with the use of a special fitting which may be obtained from the architect and also by the use of the special large size Stewart tank. A catch pan may be installed under the carbureter to be covered with a 60 mesh copper gauze. All wiring is to be made up in proper form according to the instructions furnished by the engine manufacturer. All wires are to be supported with cleats so as to be out of the way and still accessible. All controls, are to be properly carried to the steering wheel with rods or wire so as to operate satisfactorily. An 18 inch diameter by 22 inch pitch three blade propeller is recommended with which a speed of about 22 miles an hour may be attained. The blades should have ample area in order to give the best results. A six cylinder motor of the same type may be used in this design with excellent results. The most suitable propeller for this larger motor will be a three bladed wheel of 18 inches diameter and 26 inches pitch. A larger tank could also be installed, and one of 18 inches diameter and 42 inches length is recommended. The same size shafting and fittings will serve equally well. Shafting may be of steel for fresh water service or Tobin bronze or Monel metal if intended for salt water service. The shafting should be tapered to standard taper. All instruments are to be mounted on the dash board.

General: Miscellaneous equipment such as lines, life preservers, fog horn, fog bell, fire extinguisher, cushions, etc., are not included. If the boat is to be built by a professional builder these items may be included in a contract or furnished separately by the owner. They should be as follows: An electric driven horn installed under the clam ventilator, a regulation fog horn and fog bell, an approved type fire extinguisher, four fenders, one 20 lb. stockless anchor, and 80 feet of ⅝-inch line, two 30 foot painters of ½-inch white cotton, one 6 foot boat hook, one regulation canoe paddle, one large size bilge pump, and cushions. Mule skin or mustange material is recommended, kapoc filled. These should be arranged with straps so that they may serve as life preservers. Linoleum may be provided on the floors if desired.

Electric Wiring: There will be a four gang Connecticut switch mounted on the dash. It should be wired to the stern post light with one gang. Two side and bow lights with another and one for emergency or spot light. There should be a light on each side of the motor compartments using a regulation type bayonette socket. All wiring is to be properly done with brewery or armored wire well cleated in place

---

Kermath's Employment Outlook

The Kermath Manufacturing Company has arranged to keep its plant open and its men at work during the coming winter season by offering the public important price concessions. The new prices of Kermath motors range from $210 to $1550.

Two Full Seasons of Uninterrupted Service

Mr. Van Court Carwithen, the owner of Vanetta, a 40-foot cabin cruiser, recently wrote the Fay & Bowen Engine Company, that the L-64 Fay & Bown engine in his boat has never once given him a moment's trouble during two full seasons of service.

Macushla Wins Race

A recent race on Lake Washington conducted by the Seattle Motor Boat Club for the Rudder's Cup was won by the 32-foot cruiser Macushla owned by Paul Carrigan. Of the twenty-one boats which started twenty finished the course of 31.4 miles. Runabouts and cruisers of all sizes and many varieties of power equipment competed and the 20 h.p. Gray motor with which Macushla was equipped did unusually well in winning this event.

The Evinrude Again $100

The Evinrude standard 2 H.P. model in addition to being sold now at the pre-war price (1917) of $100 has had a number of new features added to it.

Red Wing Baby Doll

"Baby Doll" the newest and smallest motor manufactured by the Red Wing Motor Company, is a unit power plant, 10-14 h. p., four-cycle, with elevated pump and other late improvements.

Advertising Index will be found on page 122

KERMATH

"A Kermath Always Runs"

The Best Way To Judge a Marine Motor

Performance, of course, is what you are looking for---year in and year out marine motor service that you can always bank on under all conditions. Possibly the best way to find this out is to investigate the world's standard-the Kermath - via some of the Kermath owners.

In other words, you rather expect us to speak well of the Kermath motor so let's for the sake of argument discount some of our statements and permit us to put you in touch with a number of Kermath owners in various parts of the country. Take their experiences and expressions as a guide to what is the best motor.

Eliminate us altogether. We will merely give you the names and what they have to say and you will quickly find out from an unbiased audience which is the finest and most dependable and most economical marine motor built.

Remember, no Kermath has ever worn out. The first Kermaths built are still running.

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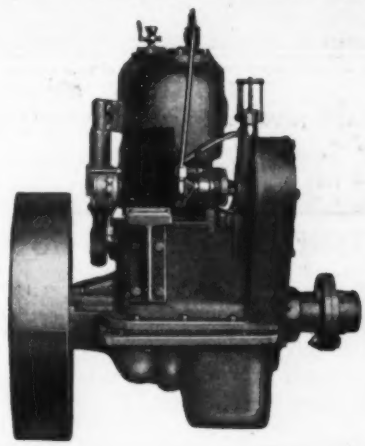
Your boat probably needs a new motor. Let's talk it over. Write Dept. "D" at once for full and further particulars.

3 H.P. to 40 H.P. Marine Motors

$135 $1550

Catalogue upon request. Write Dept. D.



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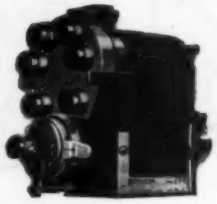

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Write for attractive dealer proposition

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Consolidated Shipbuilding Corp.
Morris Heights New York.

DISAPPEARING PROPELLER BOAT

We Discover Pearl Island

(*Continued from page* 86)

point, we motored for exactly two miles by the watch and then came to anchor off a sandy beach.

Said I to Jo, "It may not look like our bay, but it is our bay. No one but an idiot would anchor here, so I'm going ashore to find out what has happened to Pete Gonzales since the chart was drawn in 1849."

Whereupon we embarked in the dinghy and landed through breakers on a high beach fringed with coconut palms and plentifully populated by pelicans and sand crabs. These flew or scuttled according to their ability, and before we had reached the cool of the palm trees we were pretty much alone. As at our other stopping places the dense growth of the tropics fringed us in, and for all that appeared to the contrary we were intruders on a virgin shore.

Yet there were tracks in the sand—large prints of clawed feet with a serpentine line between them—and at sight of these we turned away from the shade of the palms and started in pursuit of the animal that had made them. As we topped the rise of the beach we made two discoveries, and I don't know which was the more exciting.

One was that a long lagoon stretched out behind the barrier beach and accounted for our lost bay. Here was a matter for the attention of the chart-makers, generations of whom have lived and died without giving Gonzales Island the benefit of their science. The other discovery was that in the years since the southerly storms of the Pacific first threw a bar and then a beach across the bay, alligators from the mainland have swum out and made the lagoon their home. Four of them floated away at our approach, but as we kept our element and they kept theirs there were no casualties on either side.

Having demonstrated our right of discovery by drawing the words Surprise Beach on the sand, we picked up a few coconuts, brought the inseparable camera into play, and returned aboard. It was by now three in the afternoon and we had only four hours of daylight and very little hope of finding a quiet anchorage for the night. Nevertheless, we got under way, bound for San Jose Island, the southernmost on the western edge of the Pearl group, and ran down the miles with small sails and motor. As nearly as we could gather from our inadequate chart, which is the best obtainable of the region, there was a cove on the eastern shore of San Jose that would form a lee from the northwesterly wind.

Upon our arrival, however, an hour before dark, we found the cove to be filled with ugly boulders, and, lacking time for further search, we proceeded to the nearest beach and let go there. The telltale, flying from the main, showed the breeze to be coming off the land, and in the late afternoon stillness things looked pretty satisfactory. Later, as we rowed along the shore we saw a wild pig and a little porker snuffing for sand crabs on the beach, and, deciding that we would have fried pig for breakfast, we returned, ate a little canned fish —this in the paradise of fishermen:—and turned in.

To our consternation, untroubled sleep eluded us as successfully as before. At the hour when the regular wet-season evening breeze is supposed to pass away, our enemy the northwester resumed activities, and by ten o'clock Hippocampus was surpassing her wildest efforts of the preceding night. It was the same bad combination of wind and current, and to add to our troubles the dinghy attempted to come aboard through the planking.

My patience being exhausted by midnight, I hauled it aboard in the conventional fashion, and there followed a consultation of the chart and a discussion of the possibility of finding a better anchorage. But our decision—whatever it may have been—was left in abeyance when the tide turned and we took the incoming swells over our bow. That, at any rate, was better than poking around strange reefs in the dead of night.

The wind slacking off at daylight, we slept late and it was not until ten o'clock that we were under way, resolved to leave San Jose forever behind us. There are other anchorages, and the island has a history, but we did not tarry to

(*Continued on page* 92)

Advertising Index will be found on page 122

—the greatest step forward in the battery industry since the invention of the original Columbia "Hot Shot"

ANNOUNCING *the* NEW COLUMBIA STEEL CASE "HOT SHOT" BATTERY

A sensational improvement in an ignition battery for motor boats, gas engines, tractors, and non-self-starting Ford cars—

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Waterproof—unaffected by exposure to the elements

Unbreakable—full service and life assured through protection of the battery by the steel case

➤ *Costs No More Than Fiber Case Batteries* to trade and consumer

The Steel Case "Hot Shot" No. 1461 is now on sale at electrical, hardware, and auto accessory shops; general stores; garages. This 4 cellpower battery is the most popular for ignition. Other standard "Hot Shot" sizes will be made in steel cases as fast as practicable.

Always insist upon Columbia

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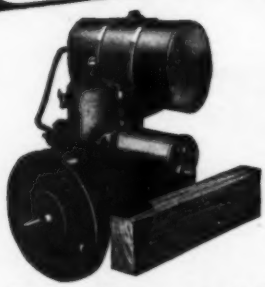
—they last longer

CAILLE DETROIT



The Caille Bantam Motor

This complete little power plant can be easily installed by yourself in your rowboat, dingey or canoe with a few common tools. It develops 2 H. P. Will drive canoe 10 to 15 miles per hour—rowboat 7 to 10 miles. Weight, 40 lbs. Compact design. Measures 9¾x12 inches. Comes complete with propeller, shaft, stuffing box and gasoline tank. Send for details. Dealers wanted. We build marine motors up to 20 H. P. Ask for special literature.

THE CAILLE PERFECTION MOTOR COMPANY
410 Caille Bldg. Detroit, Mich.

"The Capitol"

MARINE UNIT POWER PLANT

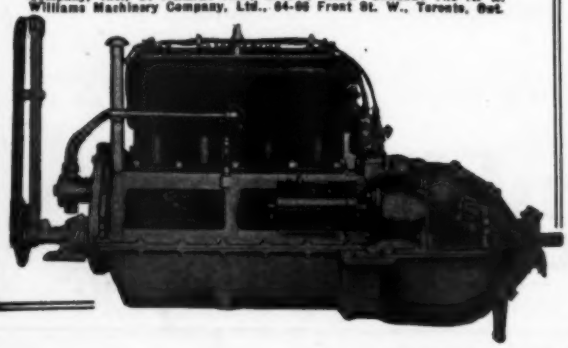
COMPLETELY ENCLOSED — COMPLETELY EQUIPPED

If you own or are planning the kind of a runabout or cruiser that deserves a really excellent power plant, you should know more about the Capitol.
There isn't a smoother, quieter running marine engine. Vibration and noise are eliminated by perfect balance, wide-faced helical-cut timing gears, force feed lubrication, ball bearing universal joint, three point suspension, and many other improvements.
Delco ignition, Atwater-Kent two-unit starting, lighting and generating system, Willard storage battery, Stromberg or Schebler carburetor, instrument plate and all other necessary equipments of highest grade.

Bore 4½" Stroke 5½"
High Speed Model 60-65 H. P. at 2000 R. P. M.
Medium Speed Model 30-34 H. P. at 1000 R. P. M.

Write today for complete description and prices

AUTO ENGINE WORKS, St. Paul, Minn., U. S. A.
Eastern Representatives: Vosmer Boat Works, Atlantic City, N. J.; Fred C. Duclon, Alexandria Bay, Jefferson Co., N. Y.; Gray-Aldrich Company, Inc., 84 Atlantic Ave., Boston, Mass. Canada: The A. R. Williams Machinery Company, Ltd., 64-66 Front St. W., Toronto, Ont.



We Discover Pearl Islands

(*Continued from page* 90)

investigate either. So far as the history goes, it concerns the tragedy of an Englishman who, some sixty years ago, took up his residence there and established a pen of a hundred pigs, and sundry chickens and cattle. When his wife and two sons had joined him on the island and their homestead was well in order, a band of Garachine Indians paddled over from the Colombian mainland, and murdered or left for dead the entire family. What barnyard stock the Indians could catch they took with them to their fastnesses; but now after two generations, the island is populous with the descendants of the pigs.

One of the Englishman's boys, his right ear and arm gone, was saved by Panamanians who happened along the day after the massacre. As time went on, superstition got in its work and the ghost of the Englishman was seen walking on the island. Now, although San Jose possesses fine water, coconut palms and excellent land, it is entirely uninhabited, for the Pearl Islanders fear both ghosts and Garachine Indians.

Had we stopped at San Jose for a shot at the pigs we might have had a lively story to tell, for they have been known to put up a pretty fight on the beach when their privacy was invaded. But as in the case of the alligators, and for much the same reason—that we were looking for the ideal anchorage—we left the pigs in possession and sailed away. Sailed for Rey Island, the largest of the group, still confident that we would find the promised land.

And find it we did, hooking along the way a delicious yellow corbina, and motoring in high spirits up the length of St. Elmo Bay, a broad bight at the southern end of the island. In a cove at the head of this bay we let go anchor, raised the awning, cooked the fish, and in the fullness of our hearts named our anchorage Comfort Harbor.

So I called it at the beginning of this article, when I unwisely wrote that our troubles were all behind us. But the telling of the story has been much interrupted, and the first interruption occurred with the close of the first paragraph.

As I wrote the words Comfort Harbor and paused a moment to listen to the fluting note of a native bird which sings like an ambitious but insufficiently instructed whippoorwill, a cayuca came alongside and a voice sounded behind me.

It was Manuel's voice, as we have since learned. But at that time we were unacquainted with Manuel, and I had little difficulty in understanding his Spanish English. Yet little by little his meaning became clear, and with heavy spirits Jo and I made ready to get under way to go with Manuel to a safe anchorage.

Comfort Harbor was a snare and a death trap. At night —no later than eight o'clock, said Manuel, with the tide in its present state—the sweeping rollers of the Pacific would break all across the cove, and we would be ground to the consistency of the fine sand along the beach. It was lucky for us, said Manuel, that he could speak such good English and did not like to see others get into trouble no more than himself.

We wonder, Manuel, how much truth was in you!

Evinrude Motors Are Winners of Races at Okauchee

A series of races has been held regularly on Okauchee Lake for small boats equippd with outboard motors. The final race of the season attracted a large number of spectators and they witnessed the fastest race of the kind ever held on September 3. The course was 3½ miles and was covered by an Evinrude twin in 16 minutes and 37 seconds. This was 4½ minutes faster than the nearest competing twin cylinder motor. In a race for single cylinder engines an Evinrude machine negotiated the course in 18 minutes and 8 seconds. Practically three minutes faster than the time made by the second twin cylinder engine in the race previously. Mr. Hildebrandt, the owner of the winning boat won also the largest number of races during the season and was rewarded with the Evinrude silver trophy shield, as well as a grand prize, a 1922 Evinrude.

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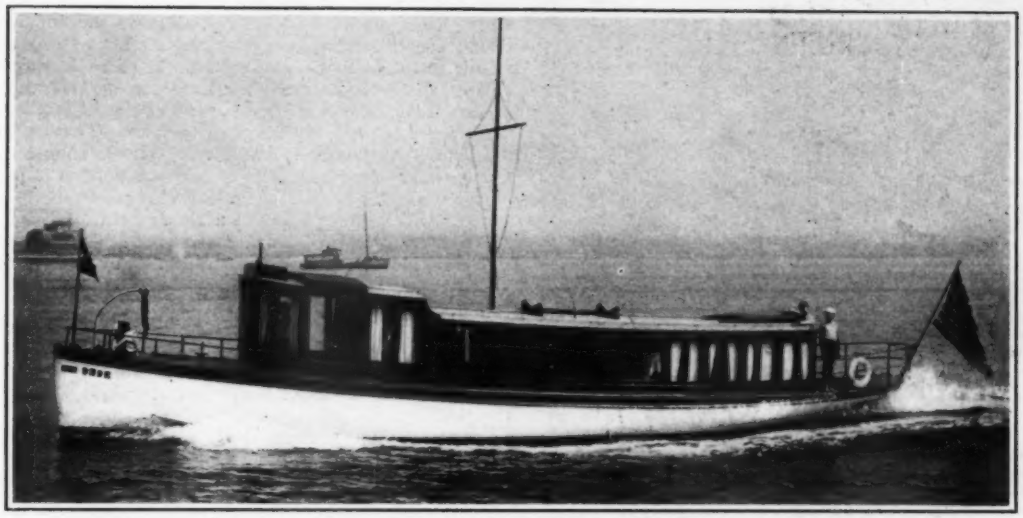
Scripps



More Scripps Winnings

TO build a racing motor was furthest from our idea when we designed the present SCRIPPS line. But to build a sensible motor that will win races against the best of other sensible motors in both cruisers and fast runabout classes—that is what we are doing every day.

The 1922 crop of SCRIPPS winnings is almost complete. Latest reports from the East tell of the victory of the 50 ft. glass cabin cruiser "Dede" by 1½ hours in the 11th Annual Long Distance Race of the New York Motor Boat Club. Dede is powered with a six cylinder SCRIPPS and owned by Commodore H. C. Granneman of the Gravesend Bay Yacht Club.

On August 6th Dede again took first in the cruiser class at the Gravesend Bay regatta of the Allied Yacht and Boat Clubs, while third place went the SCRIPPS-powered "Spartan". At the same meet the Express Cruiser event was won by Mr. T. J. Parkman's "Dixie" which has a Model E-4 SCRIPPS.

Out on the Pacific Coast the SCRIPPS reputation was upheld by the 52 foot trunk cabin cruiser "Lady May" which won first place in the long distance race of the Tacoma Yacht Club to Brentwood B. C., 116 nautical miles. Lady May is powered with a Model D-6 SCRIPPS motor and is owned by W. S. Dulmage of the Seattle Yacht Club, a prominent automobile distributor of the west coast, who, like so many in that trade, turned to boating for real sport.

SCRIPPS Motors are designed for real boats of the every day service variety—boats that go out whether it is rough or not, and come home on schedule without thought of motor troubles or delays. Here indeed is the real satisfaction of boating, a serviceable boat for real comfort and a reliable motor that is always ready for a cruise or a race.

Two, four and six cylinder models, medium duty and high speed, gasoline or kerosene—a motor for every purpose—cruiser—runabout—auxiliary or commercial.

Write to-day for catalog, prices and name of the nearest Scripps agent.

SCRIPPS MOTOR COMPANY

5819 LINCOLN AVENUE

DETROIT, MICHIGAN

"Every Moving Part Enclosed"

STEARNS-McKAY

MARBLEHEAD

ANTI-FOULING GREEN BOTTOM PAINT

For Racing and Cruising Yachts and Vessels

Increases speed, saves fuel and large expense bills. A hard and peculiar slippery finish which lasts a long time. It pays for itself many times over by eliminating costly repairs, scraping and repainting work. It is a powerful wood preservative and anti-fouler, and is equalled only by Copper Sheathing as a protection against Teredos.

MARBLEHEAD FULL AND SEMI-ENAMEL
YACHT WHITE FOR TOPSIDES

Advice and consultation free on all painting and repair work.

STEARNS-McKAY MFG. CO
MARBLEHEAD MASS. U.S.A.

GENUINE
HARTHAN
TRUE SCREW
PROPELLERS

The principle of a True Screw is strictly followed out in the patterns from which all genuine Harthan Propellers are made. This type is known to be the most efficient.

Harthan wheels are made of a special bronze composition, very tough and strong. This allows a very thin blade, the edges of which are brought down very sharp, which, with the extra high polish, reduces the power-absorbing element to a minimum.

We can supply propellers with two or three blades, in practically any pitch, either right or left hand.

Look for the Trade-Mark on Each Blade

McFARLAND FOUNDRY & MACHINE COMPANY
1100 Willow St.,
TRENTON NEW JERSEY

Representatives
NEW YORK: Topping Bros., 122 Chambers Street.
PHILADELPHIA: P. Vandercherchen's Sons, 7 N. Water Street.

Yard and Shop

(*Continued from page* 57)

Many New Houseboats Building

Marked interest is being displayed in houseboats for Florida waters. Many new contracts for boats of this type have been placed by Henry J. Gielow, Inc., of New York who are designing many of these craft. Two are being built at the plant of the New York Yacht & Engine Company and will be ready in time for service this winter. Mary Ellen, the first of these is to be a 50-foot boat building for J. Curtis McKallip of Houston, Texas. This boat will have an unusually large attractive deckhouse used as a living and music room. The forward portion is partitioned off as a pilot house. A four cylinder, 60 h. p. standard motor will be installed with a Delco light auxiliary set.

Another boat will be 68-feet in length and intended for George Mercer, Jr., of New York. This boat promises to be of unusual interest as there will be two large staterooms each containing two beds and extending the full width of the boat. There will further be two single stateroms and two bathrooms. The power plant of this boat will be a six cylinder, 90 h. p. Standard motor, while a Delco lighting plant, as well as a hot water heating outfit will also be installed.

Another hull is being built at the Mathews Boat Company plant at Port Clinton, Ohio. This boat for T. B. Van Dorn of Cleveland, will be 65-foot with twin screws. It will be built along yacht lines and provided with a pair of four cylinder 60 h. p. Standard motors. Large staterooms and deckhouse dining saloon, as well as other accommodations characterize this vessel.

Miss St. Lawrence Is Seaworthy

The Fisher trophy challenger Miss St. Lawrence made the trip from Clayton to Hamilton, Ontaria, under her own power. The trip across Lake Ontario was boisterous as high seas were running but she came through without shipping a drop of water while carrying an extra weight of over 1200 pounds. The cost guard became alarmed as they saw the boat from in and watched her while she made the harbor and later expressed themselves as having been much concerned because of the velocity of the wind and the heavy seas. It takes a good husky boat to stand the buffeting which this one has endured and yet she will be ready to give a good account of herself in the Fisher trophy races.

New Branch Manager

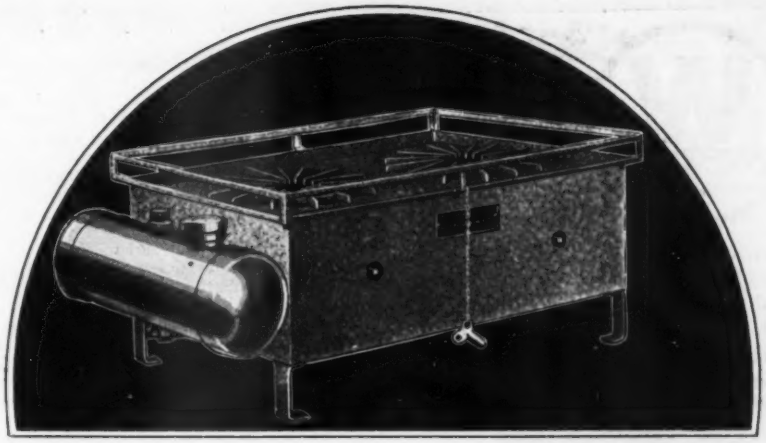
The Philadelphia branch of the Bruns Kimball Company, has recently added to its staff, H. E. Dantzebecker as manager. For the past thirty years he has been engaged in practice as Naval Architect and Marine Engineer in Philadelphia territory and enjoys the confidence of the entire country. He has also served as measurer for the racing association of South Jersey Yacht Clubs and is an expert in motor boating subjects. Clients of the company desiring advice on the installation of any of the engines handled by the firm, which include Sterling, Regal, Wolverine, Peerless Gray Prior, Doman, Kermath, and Universal machines will find intelligent and courteous service at all times.

A Puget Sound Knock-About

From the lofts of the Washington K-D Co. of Seattle, Washington and the ideas of Capt. Williams as to what makes an ideal small cruiser, comes the beautifully set up little utility sailor and cruiser which immediately set the Northwest agog. This little sailor is only 18 feet long, beam 5 1-2 feet with removable center board when under power, a cockpit of 5 feet giving superb room for lounging quarters, and the 124 square feet of sail with which it is equipped, giving the crew plenty of exercise.

Inside the cabin is one berth on each side. Also mounted in a most interesting and practical manner is a small Shipmate stove which cooking and baking is attended to. Amidship directly beneath the cabin hatch is set the little bear of a 3-4 h. p. Kermath power plant which drives this boat at eight miles. The boat was primarily set up for a two man crew to make cruises anywhere in the waters from Seattle to Alaska, but has been found unsurpassable as a general home craft embodying as it does, facilities for either sailing or power.

Advertising Index will be found on page 122



GALLEY Auto KOOK KIT

TRADE MARK

The practical and efficient galley stove for fresh and salt water craft

A REALLY practical gasoline stove for marine use. Built especially for galley use—efficient—occupies minimum space—made of the very best materials obtainable—economical to operate—perfectly safe under all conditions.

Auto-Galley-Kook-Kit is not an experiment, but a time tested product built by men who have been building gasoline stoves for years. Designed in accordance with ideas of several prominent motor boat owners and builders and pronounced by them as the best galley stove on the market.

Handled by all the leadng marine supply houses in the principal Atlantic and Pacific Coast cities.

Specifications:

Size, 20¼" x 10½" x 5⅛"; legs 2" high; body made of galvanized iron, strongly riveted; all fittings galvanized or of copper or brass; tank made of brass, carefully tested; has rail around top to prevent utensils from sliding off. Burns ordinary motor gasoline—gives a steady hot blue flame that a thirty mile wind can not blow out. Equipped with a full sheet of galvanized iron for covering of table or bench on which stove is mounted. Has slots for legs to fit into. Pump and funnel with each stove.

Price, complete, $20.00

If desired. Auto Galley Kook Kit can be furnished with the tank separate from the stove, and equipped with 15 feet of copper tubing so the tank can be mounted on deck.
Price, complete with 3 gal. tank, 10" pump. $32.50 Price complete with 1 gal. tank, small pump. $27.50

PRENTISS-WABERS STOVE CO.

General Offices and Factory
108 Spring Street, Wisconsin Rapids, Wisconsin

REPRESENTATIVES

Chicago, Ill.
MR. W. AL. TREAT, 190 N. State St.
MR. F. H. CHOWN, 1121 GASCO BLDG.
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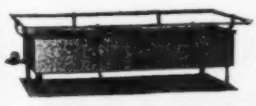
MR. H. M. WATEBMAN, 1311 S. Figueroa St.
MR. GEO. E. VICKERS, 411 N. Mont Clair St.
Portland, Ore.
New York, N. Y.
MR. CHAS. G. JOHNSTON, 98 Park Place
CANADIAN BOAT & ENGINE EXCHANGE, 43 Yonge St. Toronto, Ont., Canada

THREE BURNER MODEL

For those who wish a larger stove, we recommend the 3 burner model. Has three eight-inch grates and a tank; body size 30⅛" x 10¼" and 36⅛" x 14" over all, including rail and shut-off valve

Price, with 1 gallon tank, pump and necessary copper tubing..$35.00.

The 4 burner galley stove has four eight-inch grates and is controlled by two master burners. Size, 22½" x 20½", and 28" x 24" over all, including the rail and shut-off valve.



All stoves sold with separate tanks are provided with a shut-off valve at the stove so that it is not necessary to go to the tank to shut off the gasoline feed.

AUTO-KAMP-KOOK-KITS

For those who wish a larger stove, we recommend the 3 burner moved from the boat and carried easily, the regular Auto-Kamp-Kook-Kits are offered. They are made in several sizes, from the One Burner Model to the Six Party Suit Case Outfit.

Auto-Kamp-Kook-Kit is made of sheet steel, strongly riveted, with a chocolate brown baked enamel finish. The tank is of polished brass, with pressure gauge, and fully tested. Has master burner and detachable key handle. Burns ordinary gasoline. A thirty-mile wind cannot blow it out.

Equipment shown in illustration consists of coffee pot, folding aluminum frying pan with cover, sugar and coffee containers. All the equipment packs inside making it as compact as a suit-case.

Price, complete with equipment..$15.50
Price, without equipment $13.50

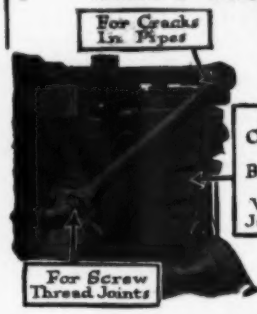
PROPELLING MACHINERY
Turbine
Electric
Diesel-Electric

W
WESTINGHOUSE ELECTRIC

MOTORS and CONTROLLERS
for
Shipyard and Shipboard

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.
Sales Offices in all Principal American Cities
Hunt, Mirk & Company
Special Pacific Coast Representatives
San Francisco, Cal.

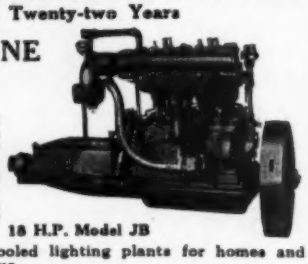
SMOOTH-ON
HERE'S YOUR REPAIR BILL!



"To Repairs on Motor Boat," 25.00
Practically all of this expense could have been saved if Smooth-On Iron Cement No. 1 had been used. Repairs cracked waterjackets, leaky screw-thread joints, scored cylinders, etc., quickly, easily and economically.
Send for our illustrated Motor & Home Repair Booklet. It's FREE—write for it today.
Smooth-On Iron Cement No. 1 comes in 6 oz., 1 lb., and 5 lb. tins. Also in larger sizes.

Sold by Supply Houses
SMOOTH-ON MFG. CO.
Dept. 24-J Jersey City, N. J., U. S. A.

GREATLY REDUCED PRICES
Established Twenty-two Years
REGAL MARINE ENGINES



LOWER manufacturing cost enables us to quote much lower prices for REGAL four-cycle engines. Made in sixteen sizes, one to eight cylinders. Weights from 135 pounds to 8500 pounds.

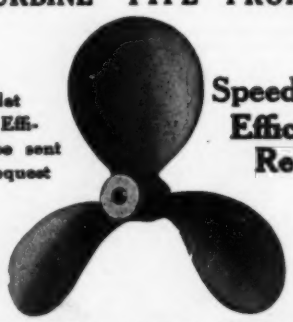
18 H.P. Model JB

REGALITE ¾ kw. air cooled lighting plants for homes and boats. Write for catalogue.

REGAL GASOLINE ENGINE CO.
74 West Pearl St. Coldwater, Mich.

HYDE TURBINE TYPE PROPELLERS

Our booklet "Propeller Efficiency" will be sent free upon request



Speed
Efficiency
Reliability

HYDE WINDLASS CO., Dept. B, Bath, Maine, U.S.A.

Advertising Index will be found on page 122

Southward With the Birds

(*Continued from page 27*)

which the Sound is capable. Since the beauty of the sunset is indescribable, I shall not try to describe it—and, besides, sunrises and sunsets are among the common rights of all mankind (sunsets, more surely) and it does not require a sea trip along the coast to watch them. The memory of that particular one, however, lingers among the memories of numerous handsome displays of nature, together with the picture of the motionless waters in which it mirrored itself for so long, and of the graceful shores clad in pine and maple, above which it glowed. It made us overlook even the most unchristian odor wafted from the fertilizer factories of Beaufort, many miles off, but to the windward that night, unluckily.

Beaufort is an odd and interesting town: and the fertilizer factories have really an insignificant part in it, if the wind blows in the proper direction. It is built, like its sister town, Morehead City, on a flat strip of land, almost entirely surrounded by water; but there is no other place on the coast, I dare say, where there is so little water for so much show of it! We were told that one can never expect to see so many boats of all sizes stranded at one time on the flats, waiting for the lift of the tide: which is quite true, as we verified for ourselves, almost at our own expense, while we went gently nosing our bow here and there into the mud, trying to make our way through the narrow channels. Having been forewarned, however, we did not pile up on anything, and by the side of the biological station, we found a little cove where we could spend a Sunday in peace. Great endeavors were ahead of us: for Beaufort, with all its shallowness, is the place where the small boat must follow the ambitious ways of the big one and beat out into the open ocean. And from here on for a couple of hundred miles, it is plain outside work: no quibbling as to the appropriateness of definition.

Large yachts and yachts that are speedy enough, often take this outside draft of open sea at one gulp. Smaller yachts and less speedy ones, try to divide it into two approximately equal parts, making in one day Southport at the mouth of the Cape Fear River, and Georgetown, or even Charleston, the next. But for a little craft like our own, with little speed and numerically so weak a crew—it reminds me often of a lovable and diminutive pet dog, whose legs are so much shorter than his ambitions—the feat of covering the huge distance of two hundred miles in one lap was unattainable, and even the two-lap compromise with the unfriendly ocean was beyond its powers of mechanical and human endurance. The outside run, therefore, turned for us into a sort of hide-and-seek game, wherein the chief daily occupation was running inlets for the purpose of finding a nightly anchorage.

There is no lack of inlets all along that stretch of coast; that is to say, of passages which, through the high barrier of sand dunes, lead from the sea into inside lagoons, sheltered and smooth. The difficulty is not the want of holes in the wall, but the getting into and out of them. Charts say nothing about them, wisely showing a shaded blank where they are supposed to be: it would be even better if the charts did not attempt to give a general idea of the conformation of the inlets by drawing the contours of shoals and sandspits. The pilot books say nothing about them, beyond making the statement that "in 1916 the channel was to be found in such and such a place"—utterly superfluous as a statement and misleading as information, because the channel of 1920 is certainly somewhere else and it will be in an entirely different location in 1923. Whenever we tried to make use of the ever-so-scanty and cautiously contingent information of the official documents, we got into trouble. Even the buoys that mark the channel in three of the inlets are reliable, in so far as they go, and they do not go very far.

The reason for all this, is that the sand at the entrance of the inlets lies in shifting banks, and that the strong tidal currents and the heavily pounding waves, during storms, and the powerful winds, play with them, as children with blocks and toy buildings: one day they build a bar where there was a channel, and the next day they take the bar away to pile everything on the shore: they throw out a long spit as stout as a sea-wall at one time, and the next they cut it in two, opening a passage large enough for a steamer: and so on and on, through the seasons and the years. It is no exaggeration to say that the inlets change from day to day: a single storm is sufficient to alter their structure so substantially as to make it unrecognizable. Evidently, the skipper that wants to enter the inlets—or must—is left to his own devices: he guides his ship into assumed channels, where the color of the water is darker, or where the breakers flank an avenue of deeper and smoother water, or where his sailor's nose scents a good way, or where he hopes his sailor's luck will keep him afloat. Running a-ground in such places may prove a serious affair, even though land is almost within reach of one's hand: it is, indeed, a case of too much land, or too much of

(*Continued on page 106*)

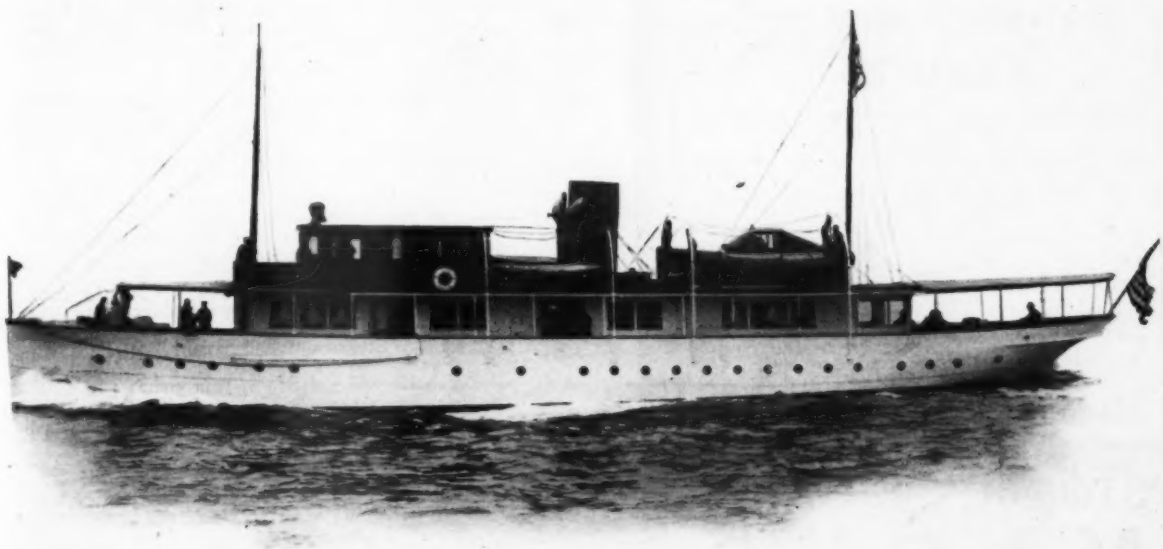
Winton

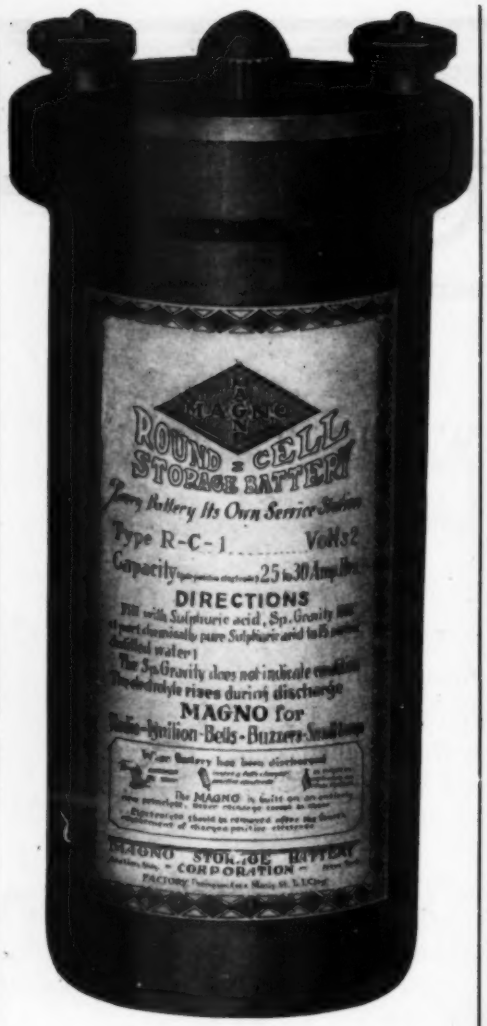
Cynthia, a Twin Screw Diesel Yacht

Length:- 129 ft. Beam:- 23 ft. Draft:-6½ ft.
Owner:- Commodore Merrill B. Mills, Detroit.
Designers:- Cox & Stevens, New York City.
Builders:- Tebo Yacht Basin Company, Brooklyn.
Power Plant:-A pair of six cylinder Winton Diesel Oil Engines rated at 250 H. P. each, designed and built by the Winton Engine Works, Cleveland, Ohio.

Winton Engine Works Cleveland, Ohio, U.S.A.

NEW YORK CITY: A. G. Griese, Inc., 30 Church St. NEW ORLEANS: A Baldwin & Company
WASHINGTON, D. C.: R. L. Fryer, 817 Albee Bldg. LOS ANGELES: F. G. Bryant, 704 Delta Bldg.
SEATTLE: H. W. Starrett, Sunset Engine Co.





Equals 4 dry cells
Costs 25 c

The storage battery Magno is recharged by inserting a "spare" electrode. "Spares" are exchanged at your dealers or our factory at 25c each.

A "spare" electrode will do the work of 2 dry cells and will outlast 2 such sets of dry cells. Thus for twenty-five cents you get the equivalent of 4 dry cells. You cut your battery costs by seventy-five percent.

Learn more about the Magno. It's the most practical battery made for motor boat ignition, lights and radio. Write today for our folder F 1-9.

Magno Storage Battery Corp.
Aeolian Bldg. New York

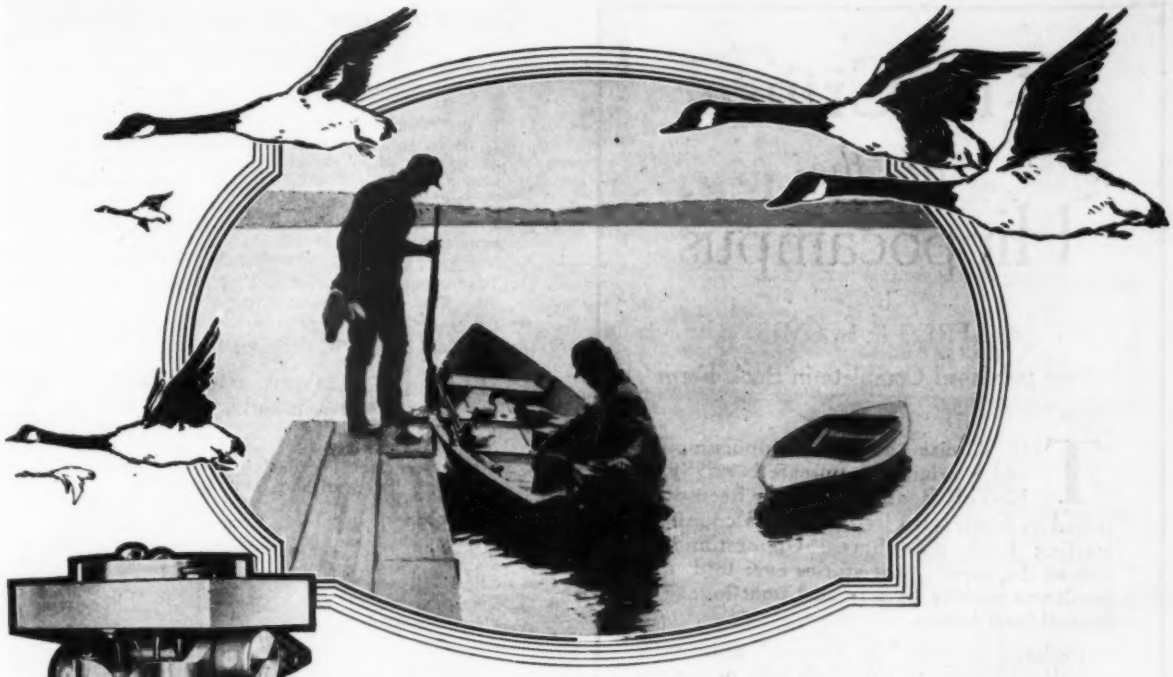
STORAGE BATTERY
MAGNO

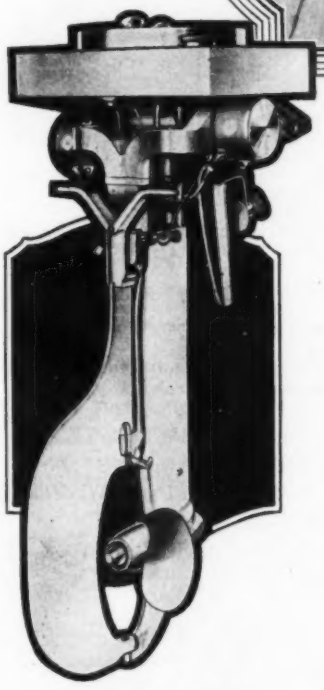
Questions and Answers, Nos. 6 and 7

(*Continued from page* 31)

54. Q: What is the net error which must be accounted for to convert a magnetic course to a compass course with two points westerly variation and one point easterly deviation?
A: *One point E.*
55. Q: What is the net error which must be accounted for to convert a magnetic course to a compass course with two points westerly variation and ½ point westerly deviation?
A: *½ point W.*
56. Q: What is the net error which must be accounted for to convert a magnetic course to a true course with two points westerly variation and one point easterly deviation?
A: *2 points W.*
57. Q: What is the net error which must be accounted for to convert a magnetic course to a true course with two points westerly variation and ½ point westerly deviation?
A: *2 points W.*
58. Q: In which direction should the error mentioned in question No. 52 be applied?
A: *To the right.*
59. Q: In which direction should the error mentioned in question No. 53 be applied?
A: *To the right.*
60. Q: In which direction should the error mentioned in No. 54 be applied?
A: *To the left.*
61. Q: In which direction should the error mentioned in No. 55 be applied?
A: *To the right.*
62. Q: In which direction should the error mentioned in No. 56 be applied?
A: *To the left.*
63. Q: In which direction should the error mentioned in No. 57 be applied? A: *To the left.*
64. Q: In changing from true to magnetic courses, or vice versa, should variation, deviation, or both, be allowed for?
A: *Variation only.*
65. Q: In changing from magnetic to compass courses, or vice versa, should variation, deviation, or both, be allowed for? A: *Deviation only.*
66. Q: In changing from true to compass courses, or vice versa, should variation, deviation, or both, be allowed for?
A: *Both variation and deviation.*
67. Q: The variation off the Florida coast is 0. Off the coast of Maine 1½ points westerly. If the true course to go from Maine to Florida is SW ½ S off the coast of Maine, what will be the true direction of the same course off the coast of Florida?
A: *SW ½ S; same true course as off the coast of Maine.*
68. Q: The variation off the Florida coast is 0. Off the coast of Maine 1½ points westerly. If the magnetic course to go from Maine to Florida is SW x W off the coast of Maine what will the same magnetic course be off the Coast fo Florida?
A: *SW ½ S.*
69. Q: In determining the deviation of your compass by putting your boat over a course the magnetic direction of which as determined by the chart is NE x N and your compass indicates NE ¾ N what is the deviation?
A: *¼ point W.*
70. Q: In determining the deviation of your compass by putting your boat over a course the magnetic direction of which as determined by the chart is NE x E and your compass indicates N x E½E what is the deviation?
A: *3½ points E.*
71. Q: In determining the deviation of your compass by putting your boat over a course the magnetic direction of which as determined by the chart is E and your compass indicates E ½ S what is the deviation?
A: *½ point W.*
72. Q: In determining the deviation of your compass by putting your boat over a course the magnetic direction of which as determined by the chart is S x E and your compass indicates S x E what is the deviation?
A: *0 deviation.*
73. Q: In determining the deviation of your compass by putting your boat over a course the magnetic direction of which as determined by the chart is SW and your compass indicates SW¼W what is the deviation?
A: *¼ point W.*
74. Q: In determining the deviation of your compass by putting your boat over a course the magnetic direction of which as determined by the chart is WSW and your compass indicates WSW½W what is the deviation?
A: *½ point W.*
75. Q: In determining the deviation of your compass by putting your boat over a course the magnetic direction of which as determined by the chart is WNW and your compass indicates NW x W¼W what is the deviation?
A: *¾ point W.*

Advertising Index will be found on page 122





3 H. P. Designed by
Ole Evinrude

ANOTHER VICTORY

Elto takes first place by a wide margin in motor race at Pacific International Regatta on July 29th, against twenty competitors.

Instant Starting on Cold Damp Mornings

You don't have to fuss and cuss and waste time in starting your motor to get to the hunting grounds, if it's an Elto Light Twin.
The Elto Light Twin is the motor with the BIG SPARK. Its ignition embodies the famous Atwater Kent Uni-Sparker. The Elto starts without spinning the flywheel. Simply back the flywheel against the compression point and you get a big, hot spark that gives you a full-power explosion and quickly speeds you away.

Elto's Speed Gets You There First!

You'll make a quicker get-away from the lodge and faster time on the way if your outboard motor is an Elto Light Twin. You can start behind the rest and still get there first to choose your favorite blind
The Elto, Ole Evinrude's latest motor, has proved unquestionably that it's the fastest standard outboard motor. Its full 3 horse-power is equal to the demands of rough, stormy weather.

Safe in Snaggiest, Weediest Shallows.

Sportsmen appreciate Elto's built-in, perfected tilting feature. The Elto tilts automatically over logs and rocks and can be raised entirely out of the water—takes you safely and surely wherever the boat will float. Weedless in construction.
The Elto's light weight, perfect mechanical balance and smooth, vibrationless operation make it safe on the lightest frailest skiffs. Novel underwater exhaust makes it exceptionally quiet. Rudder folds compactly for carrying. Motor is as light as good engineering will permit—46 lbs. The Elto steers from any part of the boat. It's the ideal motor for the sportsman.
Remember its name—The Elto Light Twin. It's the motor that sportsmen everywhere are talking about. For catalog and name of the Elto dealer near you write to

ELTO OUTBOARD MOTOR CO.
Dept. F., Mfrs. Home Bldg. Milwaukee, Wis.

Elto

Light Twin Outboard Motor

The Cruise *of the* Hippocampus

by

ALFRED F. LOOMIS

Now published Complete in Book Form

"THE Cruise of the Hippocampus" which originally appeared serially in MoToR BoatinG has now been published in book form by one of the country's leading book publishers. Unquestionably one of the finest cruise stories ever told, this book was written by a typical boat lover for typical boat lovers.

Perhaps it was Mr. Loomis' ability to visualize his audience through long acquaintance with the readers of MoToR BoatinG that enabled him to talk so intimately of the boating joys and boating trials he met with on this cruise. Starting from New York with two companions in a 28-ft. auxiliary yawl the author experienced about every variety of excitement and adventure there is to be found on a cruise of three or four thousand miles. The trip covered many points of interest down the Atlantic Coast, through the West Indies and across the Caribbean Sea to the Panama Canal.

You'll enjoy this book as proof of the possibilities of small boat cruising, and you'll enjoy it again just as a mighty good story. It presents the rare combination of an actual trip recorded by an interesting writer. There is no need to draw on the writer's imagination when typing his manuscript in the yawl's cabin in some distant port.

Alfred F. Loomis is a writer of real ability, with wide observation and long experience in the operation of small boats. As an officer on a U. S. sub chaser during the war he absorbed the traditions and atmosphere, which makes his writings an authentic picture of life on the sea.

Price $2.00

MoToR Boating 119 West 40th Street, New York, N.Y.

Questions and Answers on Lessons Nos. 6 and 7

(Continued from Page 98)

76. Q: In determining the deviation of your compass by putting your boat over a course the magnetic direction of which as determined by the chart is NW x N and your compass indicates NW x N½N what is the deviation?
A: *½ point W.*

77. Q: True course NE variation one point E. Find magnetic course.
A: *NE x N.*

78. Q: True course NE variation 1 point E deviation ½ point W. Find compass course.
A: *NE ½ N.*

79. Q: Magnetic course SE deviation 1 point E. Find compass course.
A: *SE x E.*

80. Q: Compass course NW deviation ½ point W. Find magnetic course.
A: *NW ½ W.*

81. Q: Compass course NW deviation ½ point E, variation 1 point E. Find true course.
A: *NW x N ½ N; or N 28° 7′ 30″ W; or NNW ½ W; or* 331°, 52′ 30″.

82. Q: Magnetic course SW, variation 1 point E. Find true course.
A: *SW x W; or* 236° 15′ *or S* 56° 15′ *W.*

83. Q: True course 225°, variation 11¼° W. Find magnetic course in degrees.
A: 236° 15′ *or S* 56° 15′ *W.*

84. Q: True course S 45° W, deviation 5⅝ E. Find compass course in degrees.
A: *Can't be answered without knowing amount of variation. Assuming* 0 *variation answer is SW ½ S; or* 219° 22′ 30″; *or S* 39° ′ 30″.

85. Q: True course S 45° W, variation 11¼° W, deviation 5⅝° E. Find compass course in points.
A: *SW ½ W.*

86. Q: Magnetic course 135°, deviation 5⅝° E. Find compass course in degrees.
A: 129⅜° *or* 129° 22′ 30″; *or S* 50° 37′ 30″ *E. Answer if given in points should be SE ½ E.*

87. Q: Compass course S 45° E, deviation 5⅝° E, variation 11¼° W. Find true course in degrees.
A: *S* 50⅝° *E or S* 50° 37′ 30″ *E or* 129° 22′ 30″.

88. Q: Magnetic course N 45° E, variation 5° 37′ 30″ W. Find true course.
A: *N* 39° 22′ 30″ *E; or* 39° 22′ 30″; *or NE ½ N.*

89. Q: True course NE x E ¼ E, variation 1 point W, deviation 1 point E. Find compass course.
A: *NE x E ¼ E.*

90. Q: Magnetic course SW x W ½ W, variation 1 point E, deviation ½ point E. Find true course.
A: *W x S ½ S; or WSW ½ W; or* 253° 7′ 30″; *or S* 73° 7′ 30″.

91. Q: Compass course E x S, deviation ½ point W, variation ¼ point E. Find magnetic course.
A: *E ½ S.*

92. Q: Magnetic course E ¾ S, variation 10° 26′ E. Find true course.
A: 108° 52′ 15″

93. Q: Compass course NE, deviation ⅝ point E. Find magnetic course.
A: *NE ⅝ E.*

94. Q: Magnetic course 45°, variation 11° E, deviation 17° W. Find compass course.
A: 62°.

95. Q: True course 106° 52′ 3″, variation 10° 56′ W, deviation 4° 06″ E. Find magnetic course.
A: 117° 48′ 30″.

96. Q: True course ENE ¼ E variation 1 point W, deviation ¾ point W. Find compass course.
A: *E.*

97. Q: True course E x N, ¾ N, variation 1 point W, deviation ¾ point W. Find compass course.
A: *E.*

98. Q: True course 70° 18′ 45″, variation 1 point W, deviation ¾ point W. Find compass course.
A: *E.*

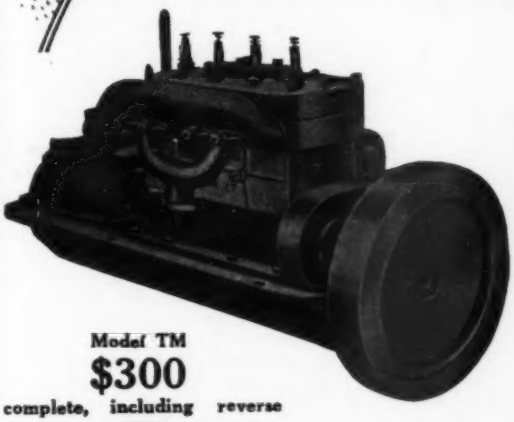
99. Q: True course N 70° 18′ 45″ E, variation 1 point W. deviation ¾ point W. Find compass course.
A: *E.*

100. Q: Suggest any other compass question which you think has been overlooked and answer it.

Advertising Index will be found on page 122

PALMER ENGINES
TRADE MARK REG. U.S. PAT. OFF.

Power Your Boat with a Palmer Engine

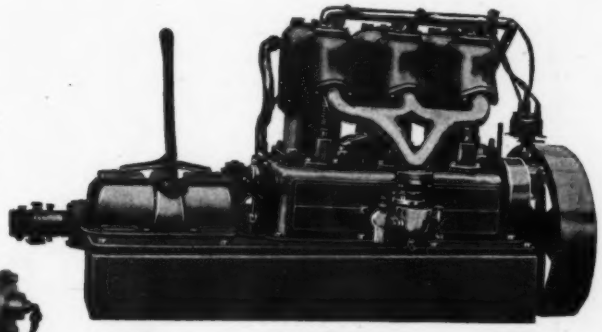


Model TM
$300
complete, including reverse gear
4 cyl., 4 cycle, 8-10 H.P.

You'll never find a better built, more carefully designed or more reasonably priced motor than the Palmer, no matter which size and type of Palmer engine you consider.

For example, this new model T M Palmer is as fine a little four cylinder, four cycle motor as can be built. The price of $300 covers the complete motor, including spark plugs, carburetor, magneto, muffler and reverse gear.

Below is shown one of the famous Palmer NR engines, the most popular medium-duty marine motors on the market. Bore 5". Stroke 6". 2, 3 and 4 cylinder models.



NR-2	10-12 H.P.	$425
NR-3	15-18 H.P.	$600
NR-4	20-24 H.P.	$775

And then there's the Palmer Model YT, new this year. A single cylinder, four cycle valve-in-head 2 H.P. motor that makes an ideal power installation for high-grade yacht tenders and other small boats. Weight only 95 lbs. Price $98.00.

Model V-H 14-16 H.P.
$700.00

The Model V H, 14-16 H.P. is a high speed four cylinder, four cycle engine with enclosed overhead valves and overhead camshaft. Equipped with starter, generator, battery, high tension magneto, jump spark ignition. Four cylinders, cast enbloc.

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Jacksonville, Fla., 122 So. Ocean Street
Vancouver, B. C., V. M. Dafoe

Great Circle Sailing

(Continued from page 36)

TRUE BEARING OR AZIMUTH.

LATITUDE 41°.

DECLINATION—SAME NAME AS—LATITUDE.

Dec.	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	Dec.
Apparent Time. A. M.	April. 22 / 25 / 28 — May. 1 / 5 / 8 / 12 / 16 / 21 / 26 — June. 1 / 10												Apparent Time. P. M.
	August. 22 / 19 / 16 — July. 28 / 24 / 19 / 12 / 3												
	October. 25 / 28 / 31 — November. 3 / 6 / 10 / 14 / 17 / 22 / 27 — December. 3 / 11												
	February. 18 / 23 / 27 — March. 9 / 5 / 2 — January. 29 / 25 / 21 / 16 / 10 / 2												
h. m.	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	h. m.
IV 40									63 46	62 57	60 36	59 54	20
50											62 14	61 31	10
V 00						67 39	66 45	66 01	65 17	64 34	63 50	63 06	VII 00
10						69 06	68 22	67 38	66 53	66 09	65 24	64 40	50
20						70 43	69 58	69 13	68 28	67 43	66 58	66 12	40
30						72 18	71 32	70 47	70 01	69 16	68 30	67 44	30
40						73 53	73 07	72 21	71 35	70 48	70 01	69 15	20
50						75 27	74 40	73 54	73 07	72 19	71 32	70 45	10
VI 00	80 33	80 07	79 21	78 34	77 47	77 00	76 13	75 26	74 38	73 51	73 03	72 14	VI 00
10	82 29	81 42	80 55	80 08	79 21	78 34	77 46	76 58	76 10	75 21	74 32	73 43	50
20	84 25	83 38	82 51	82 03	81 15	80 27	79 39	78 50	78 01	77 12	76 22	75 32	40
30	86 21	85 34	84 46	83 58	83 10	82 21	81 32	80 43	79 53	79 03	78 12	77 21	30
40	87 18	86 30	85 41	84 53	84 04	83 14	82 24	81 34	80 44	79 53	79 01	78 10	20
50	88 15	87 26	86 37	85 48	84 58	84 08	83 18	82 27	81 36	80 44	79 51	78 59	10
VII 00	90 33	89 44	88 55	88 05	87 14	86 24	85 32	84 40	83 48	82 55	82 02	81 08	V 00
10	92 13	91 23	90 33	89 42	88 51	87 59	87 07	86 15	85 22	84 28	83 33	82 39	50
20	93 54	93 03	92 12	91 21	90 29	89 37	88 44	87 50	86 56	86 01	85 06	84 10	40
30	95 36	94 45	93 54	93 01	92 09	91 16	90 22	89 27	88 32	87 36	86 40	85 43	30
40	97 21	96 29	95 37	94 44	93 50	92 56	92 01	91 06	90 10	89 13	88 15	87 17	20
50	99 08	98 15	97 22	96 29	95 34	94 39	93 43	92 47	91 49	90 51	89 52	88 52	10
VIII 00	100 57	100 04	99 10	98 16	97 21	96 25	95 28	94 30	93 31	92 32	91 32	90 30	IV 00
10	102 50	101 56	101 02	100 06	99 10	98 13	97 15	96 16	95 16	94 15	93 14	92 11	50
20	104 46	103 51	102 56	102 00	101 03	100 05	99 05	98 05	97 04	96 02	94 59	93 54	40
30	106 46	105 51	104 54	103 57	102 59	102 00	101 00	99 58	98 56	97 52	96 47	95 41	30
40	108 50	107 54	106 57	105 59	105 00	104 00	102 58	101 56	100 52	99 47	98 40	97 32	20
50	110 59	110 03	109 05	108 06	107 07	106 05	105 02	103 58	102 53	101 46	100 37	99 28	10
IX 00	113 14	112 17	111 18	110 19	109 17	108 15	107 11	106 06	104 59	103 50	102 40	101 29	III 00
10	115 34	114 37	113 38	112 37	111 35	110 32	109 27	108 20	107 12	106 02	104 49	103 36	50
20	118 02	117 03	116 04	115 03	114 00	112 55	111 49	110 41	109 31	108 19	107 05	105 50	40
30	120 36	119 38	118 38	117 36	116 33	115 27	114 20	113 11	111 59	110 46	109 30	108 12	30
40	123 19	122 20	121 20	120 18	119 14	118 08	116 59	115 49	114 37	113 21	112 04	110 44	20
50	126 11	125 12	124 12	123 10	122 05	120 59	119 50	118 38	117 24	116 07	114 49	113 26	10
X 00	129 12	128 14	127 14	126 12	125 08	124 01	122 51	121 39	120 25	119 07	117 46	116 22	II 00
10	132 23	131 27	130 27	129 26	128 22	127 15	126 06	124 54	123 38	122 20	120 58	119 32	50
20	135 46	134 52	133 53	132 52	131 49	130 44	129 35	128 23	127 07	125 48	124 26	122 59	40
30	139 21	138 27	137 31	136 33	135 31	134 27	133 19	132 08	130 54	129 35	128 13	126 45	30
40	143 08	142 17	141 24	140 28	139 28	138 26	137 21	136 12	134 59	133 42	132 20	130 53	20
50	147 08	146 20	145 30	144 37	143 42	142 43	141 41	140 35	139 25	138 10	136 51	135 26	10
XI 00	151 19	150 37	149 51	149 03	148 11	147 17	146 20	145 18	144 13	143 03	141 47	140 27	I 00
10	155 44	155 06	154 26	153 43	152 57	152 09	151 18	150 23	149 23	148 20	147 11	145 57	50
20	160 22	159 48	159 14	158 38	157 59	157 19	156 35	155 47	154 57	154 01	153 02	151 58	40
30	165 05	164 40	164 14	163 46	163 16	162 43	162 09	161 31	160 51	160 06	159 18	158 25	30
40	169 59	169 41	169 24	169 04	168 44	168 21	167 57	167 31	167 03	166 32	165 58	165 20	20
XI 50	174 58	174 49	174 40	174 30	174 20	174 08	173 56	173 42	173 28	173 12	172 54	172 35	XII 10
Sun rises . . .	h. m. 5 17	h. m. 5 14	h. m. 5 10	h. m. 5 06	h. m. 5 02	h. m. 4 58	h. m. 4 54	h. m. 4 50	h. m. 4 46	h. m. 4 42	h. m. 4 38	h. m. 4 33	Sun rises
Sun sets . . .	6 43	6 46	6 50	6 54	6 58	7 02	7 06	7 10	7 14	7 18	7 22	7 27	Sun sets.
Azimuth . .	° ′ 74 01	° ′ 72 49	° ′ 71 18	° ′ 69 57	° ′ 68 35	° ′ 67 12	° ′ 65 50	° ′ 64 27	° ′ 63 03	° ′ 61 39	° ′ 60 14	° ′ 58 49	Azimuth.

In South latitude the azimuth is reckoned from South { to East when the time is A. M. / to West when the time is P. M.

Fig. 33. The Azimuth table for Latitude 41°, Declination same name as Latitude.

changing course. It would be beyond mortal ability to keep the rudder poised at the delicate angle necessary to make the vessel follow the great circle track precisely. Our only directional instrument is the compass, and it gives rhumb courses. To sail a precise great circle, is an impossibility. The practice is to divide the great circle up into a number of convenient sections, each 150 to 250 miles long, and sail rhumb courses representing each section, choosing a compass course which will coincide with the great circle course as nearly as possible. The scheme is illustrated in Fig. 29, where the solid curve represents the great circle track, the dotted lines the small rhumbs, nearly coinciding with it, and the dot and dash line the ordinary rhumb from A to B.

A standard method is, at the outset, to find the great circle distance, and the angular difference between the initial and final great circle courses. Suppose, for instance, the distance is 1,500 miles, the initial course NE by E and the final course E¼N. Here is a difference of 2¼ points, or 9 quarter points. Now the navigator might divide the total distance into say 9 legs of about 160 miles each, start his voyage by sailing the initial course and plan every 100 miles to change his course ¼ point to the right.

Or, the navigator might prefer to adopt the practice of changing his course every 150 or 200 miles, or whatever distance he prefers, without bothering to split the difference between the initial and final courses. Such things are matters of personal preference, the important thing being to change the steering course frequently enough so that the vessel will be kept close to the great circle track.

Great circle courses and distances may be found in various ways. But however found, it is good practice to transfer them to a Mercator chart for sailing purposes. Great circle charts are on small scale, and do not indicate aids or dangers to navigation nor do such features appear in books of tables! A great circle course is not much good, except to be avoided, if it carries the vessel over an island or coral reef! Thus the preferred practice is to transfer the great circle track or the first part of it to a sailing chart. It is, of course, unnecessary, and it would probably be futile, to transfer the entire great circle track to the sailing chart. It is easy enough to plan courses, but hard indeed to follow them. Like enough, when the next day's fix is obtained by astronomical observations it would be found that the vessel was some miles off the great circle as laid down. In such case, it would simply waste time to try to get back onto the great circle originally planned; and the navigator would lay down a new one from his fix to destination; just as he would do if sailing a rhumb course. Thus it is sufficient to transfer to the sailing chart only enough of the great circle to last for present purposes, such a a day' run, or until the next observational fix will probably be obtained.

Methods of Finding the Great Circle Course and Distance: A great many methods of solving the great circle problem have been devised. A terrestrial globe has sometimes been employed, and a variety of graphic methods and special tables have been devised; some of which have survived, while others have gone by the board. G. W. Littlehales, of the United States Hydrographic Office, has contributed a learned and comprehensive outline of the subject in his book. The Development of Great Circle Sailing, (U. S. Hydro. Office, Pub. No. 90.) Among the special tables in use, those of John T.

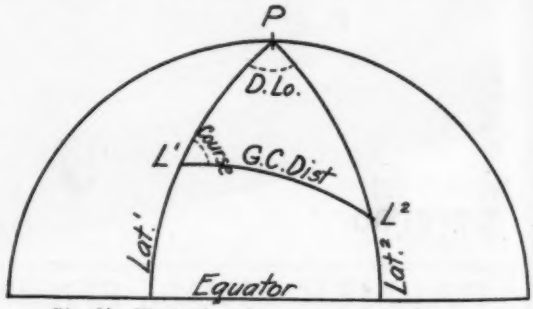

Fig. 34. Illustrating the great circle problem

(Continued on Page 104)

For Your Fall Hunting Trip

RAJAH
SPARK PLUGS

Waterproof Type

Among your other preparations don't neglect to provide Waterproof RAJAH Spark Plugs to fire the little outboard motor on your hunting trip. If ever you want to be free from motor trouble it is when you are far from home, out for a long day of real sport, anxious to make the most of the short season.

Hunting with an outboard motor boat is hunting *de luxe*. Boating with Rajah Spark Plugs is boating *de luxe*. There's no use risking ignition trouble when Rajah insurance is so easy to get.

Waterproof RAJAH Plugs are made particularly for outboards and all other exposed marine motors. They are Waterproof, Shockproof and Breakproof. You cannot buy a more durable or reliable spark plug.

Waterproof Shockproof Breakproof
Price $1.25 All Threads

The outer end of the porcelain is protected by a molded Condensite cap. Over this is a flexible rubber nipple that extends well over the insulation on the cable. No amount of rain or dampness can affect this plug.

Like all RAJAH Spark Plugs, the Waterproof type has the very highest grade porcelain insulator. It has the same standard Rajah construction, famous for over twenty years.

There is a reason why RAJAH has long been the favorite plug for marine use. It is because RAJAH is a better plug—better materials, better workmanship, better service. You'll notice the difference after you have had a set of Rajahs in your motor for a short time.

Waterproof Rajah Plug $1.25
Standard Rajah Plug 1.00
Giant Rajah Plug 1.25
Complete with Terminal

Equip your spark plug cables with the famous Rajah Terminals. Fit all plugs, made for all size wires. A Rajah Thumb Nut Terminal included with each Rajah Plug, without extra charge.

Rajah Solderless Terminals can be installed on your wires in a few seconds, without solder or tools. Send 15c for sample.

Mfd. by RAJAH AUTO SUPPLY CO., Bloomfield, N. J., U. S. A

Great Circle Sailing

(Continued from Page 102)

TRUE BEARING OR AZIMUTH.

LATITUDE 38°.

DECLINATION—CONTRARY NAME TO—LATITUDE.

Dec.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	Dec.
Apparent Time. A. M.	March. 21 / 23 / 26 / 28 / 31					April. 3 / 5 / 8 / 11 / 13 / 16 / 19 / 22 / 25 / 28										May. 1 / 5 / 8 / 12 / 16 / 21 / 26						June. 1 / 10		Apparent Time. P. M.
	September. 23 / 21 / 18 / 16 / 13 / 10 / 8 / 5 / 2					August. 30 / 26 / 25 / 22 / 19 / 16 / 12 / 9 / 5 / 2										July. 26 / 24 / 19 / 12 / 3									
	September. 23 / 26 / 28			October. 1 / 4 / 6 / 9 / 11 / 14 / 17 / 19 / 22 / 25 / 28 / 31												November. 3 / 6 / 10 / 14 / 17 / 22 / 27						December. 3 / 11		
	March. 21 / 18 / 16 / 13 / 11 / 8 / 6 / 3 / 1					February. 26 / 23 / 20 / 18 / 15 / 12										January. 29 / 25 / 21 / 18 / 10 / 2									
h. m.	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	h. m.
VI 00	90 00																								VI 00
10	91 32	92 20	93 07	93 54																					50
20	93 05	93 52	94 40	95 27	96 14	97 01	97 48																		40
30	94 38	95 25	96 13	97 00	97 47	98 34	99 21	100 08	100 55	101 42															30
40	96 12	96 59	97 46	98 34	99 21	100 07	100 54	101 41	102 28	103 14	104 01	104 47	105 34												20
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Sun rises . .	h. m. 6 00	h. m. 6 03	h. m. 6 06	h. m. 6 09	h. m. 6 13	h. m. 6 16	h. m. 6 19	h. m. 6 22	h. m. 6 25	h. m. 6 28	h. m. 6 32	h. m. 6 35	h. m. 6 38	h. m. 6 42	h. m. 6 45	h. m. 6 48	h. m. 6 52	h. m. 6 55	h. m. 6 59	h. m. 7 02	h. m. 7 06	h. m. 7 10	h. m. 7 14	h. m. 7 17	Sun rises.
Sun sets . .	6 00	5 57	5 54	5 51	5 47	5 44	5 41	5 38	5 35	5 32	5 28	5 25	5 22	5 18	5 15	5 12	5 08	5 05	5 01	4 58	4 54	4 50	4 46	4 43	Sun sets.
Azimuth . .	° ′ 90 00	° ′ 91 16	° ′ 92 32	° ′ 93 48	° ′ 95 05	° ′ 96 21	° ′ 97 37	° ′ 98 54	° ′ 100 10	° ′ 101 27	° ′ 102 44	° ′ 104 01	° ′ 105 18	° ′ 106 35	° ′ 107 53	° ′ 109 10	° ′ 110 28	° ′ 111 47	° ′ 113 05	° ′ 114 24	° ′ 115 43	° ′ 117 03	° ′ 118 23	° ′ 119 41	Azimuth.

In North latitude the azimuth is reckoned from North { to East when the time is A. M. / to West when the time is P. M.

In South latitude the azimuth is reckoned from South { to East when the time is A. M. / to West when the time is P. M.

Fig. 35. The Azimuth table for Latitude 38°, Declination contrary name to Latitude

Towson are well and favorably known. Several graphic methods are mentioned in Bowditch, §§192-4.

It would be beyond the scope of these lessons to attempt to outline all the available methods, and we shall content ourselves with an explanation of a few, believed to be equal to any, and adequate for all practical purposes.

Great Circle Sailing by the Gnomonic Chart: The method most commonly used is that of employing the gnomonic or great circle chart. Indeed, it is the method almost exclusively used. The projection of the gnomonic chart is such, that a straight line anywhere drawn upon it, represents a great circle track. On the Mercator projection, it will be remembered, a straight line represents a rhumb track. The gnomonic projection is briefly explained in Bowditch, p. 23. In theory, the chart represents a projection of a portion of the earth upon a plane surface tangent to (touching) the earth at a selected point called the point of tangency; the eye of the observer being at the earth's center. Being at the center, the eye is in the plane of all great circles; which, therefore, appear as straight lines. The meridians, parallels, geographical features, etc., are projected onto the tangent plane, just as if the lines were carried out from the observer's eye, through them and onto its surface. Fig. 30. Thus, points on the earth at x, y, z, would be projected onto the chart at x′, y′, z′. On the chart, the meridians and equator, being great circles, appear as straight lines; while the parallels being small circles, are curved. The projection results in a much distorted chart which gives little idea of the relative sizes and directions of geographical features. The distortion is least near the point of tangency, and greatest at places farthest removed therefrom. The great virtue of the gnomonic chart is that a straight line, wherever drawn upon it, represents a great circle.

Great circle charts have been prepared for the several oceans. Their scale is small, a single chart, for instance, covering the north Atlantic. They do not show soundings, or aids or dangers to navigation, and are of no use as sailing charts. A small portion of H. O. chart No. 1280, covering the north Atlantic, is reproduced in Fig. 31.

Use of the Gnomonic Charts: The places of departure and destination are connected by a straight line. This is the great circle track. Of course, the entire line from port to port need not be drawn, but only such portion as may be required for the time being. Yet the navigator should run his eye along the edge of his rules throughout the entire distance, so as to gain a notion of where the great circle track would carry him, and as to any obstructions en route.

For instance, it is impossible to sail a great circle from New York to England, for the excellent reason that the track runs across Novia Scotia and Newfoundland! It is necessary to make sufficient easting to clear these headlands, before the great circle route becomes available. And this accounts for the fact that the steamship routes from New York to England, as laid down on the pilot charts, follow rhumb courses to about lat. 43° N, and long. 50° W (changing somewhat with the seasons), and then take up the great circle track, though the rhumb courses are carried out farther than would otherwise be necessary, in order to avoid conditions off the Great Banks.

Or, the great circle track might run into extreme latitudes, areas of prevailing fog, or ice, or adverse winds, or currents, or other untoward conditions. These are matters to be considered at the commencement of the voyage, and

(Continued on Page 114)

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Southward with the Birds

(*Continued from page* 96)

good thing—too much grace, as the devotees of Saint Anthony once exclaimed, when, having besought their patron to send them a shower, they got a set of cloudbursts that nearly drowned them out. Running inlets is an exciting diversion, especially so, when the conflicting humors of an on-shore swell and a racing ebb tide whip up heavy breakers from a calm sea,—almost as exciting as the surf-riding for which the Hawaiian canoes are famed, far and wide.

The first inlet we made for and into, was Bear, a most handsome passage with high sand-hills, carved into jagged peaks, to frame it: the hills themselves are handsome, topped, as they are, by a disheveled crown of vegetation,—mostly holly, we discovered later—which looks like the unruly locks of a young head and gives a very artistic finish. The inlet had a perfectly innocent appearance as we approached: the waves rose and fell gracefully, the sun shone brightly over a festival of colors: it was not only innocent looking, but quite inviting. There was a buoy outside of the inlet, and we made straight for it. When we reached it, however, we realized the truth of a mathematical verity once dropped into our ears by a teacher in bygone days—it takes two points to establish a line, no more, but also no fewer. At Bear Inlet, instead, we found only one buoy, that is, one point of the line: the other, which ought to have been on the bar, either was gone or had never been put there. Consequently, our line of march was left as indefinite as if we had sat on the hub of the wheel and had had all the spokes to choose from. We decided, after mature consideration, that we might make a start from the buoy and, following a straight line, go for the middle of the inlet. It was the wrong decision. We had not gone far, before we saw the gracefully rising and falling waves, even more gracefully curve behind us and tumble in a graceful cascade of white foam: the next minute our keel grazed bottom with the crunching sound of hard snow crushed under heavy wheels in zero weather. Ow, the bar—a bar! Fortunately for us, the tide was rising and the sand was soft: so we scraped over. But we changed our direction. We entered the inlet shortly afterward, keeping close to the northern spit: soon we found ourselves floundering along in thick mud, before we could discover that the place to anchor is a little cove hard by the dunes on the north side. There is a spar to mark the spot, but it is so inconspicuous that we had missed it: and even if we had not missed it, I am not sure that we should have heeded it—one grows distrustful of helps at times.

It was a dainty nook where we stopped: absolutely still, with the beautiful dunes rising steep out of the water, only a few feet away, and a gorgeous sundown gradually setting the south-west afire; and not a house, a boat, a soul was in sight. Rejoicing in this lovely loneliness of nature, we descended into the hold of our ship to sit down at a good evening meal. Alone! Is anyone sure to be alone anywhere on this earth of ours, which is so little, in spite of all its vastness? Our supper was hardly finished before we heard the raucous call of a megaphone sounding in our ears—a megaphone, when our minds were prepared for the twitter of the sandpiper and the last calls of the homing gulls and the squawking of the herons going to sleep in the marshes! We went out on deck, and there was a huge houseboat hailing *us*—us, think of it, so tiny and so frail in comparison—hailing from the very spot where we had run on to the mud flats and floundering just as we had floundered! Confident in our superior, though recent, nautical knowledge, we launched our tender and hastened to assist the big sister with information: but it took her good two hours to extricate herself from the mud and to reach deep water by our side—two hours and countless gallons of gasoline, which poured out in clouds of black smoke from the exhaust pipes of her powerful engines. To celebrate the eventful rescue of the big ship, we went to the sandy hills and brought back a boatful of holly, wherewith we and she gaily decorated ourselves: and from that day until well after the near-by holidays, we traveled decked in red and green, like a real Christmas ship.

The next morning the big ship remained at anchor. The captain had put into the inlet because the weather reports promised a storm and he wanted to run no risks with his towering and somewhat clumsy craft. We left, because nothing in the looks of the sky seemed to announce a storm, and we did not mean to go far, anyway. So we parted amidst reciprocal cheers and loud tooting of horns, wishing farewell, each of us to try the soundness of his weather sense. Both of us were right, as the event showed: the storm did break out that night and it was a bad one: but long before it broke out, we had made our next anchorage—and so both of us were satisfied. This is a surmise: we were; but I have not come across the other captain again, so I do not know how he fared thereafter.

Our next stop was at Wrightsville Inlet. It is not a lonely place like Bear: the dunes, low and scrubby, are covered with cottages and the inlet is encumbered by a trestle; there is even

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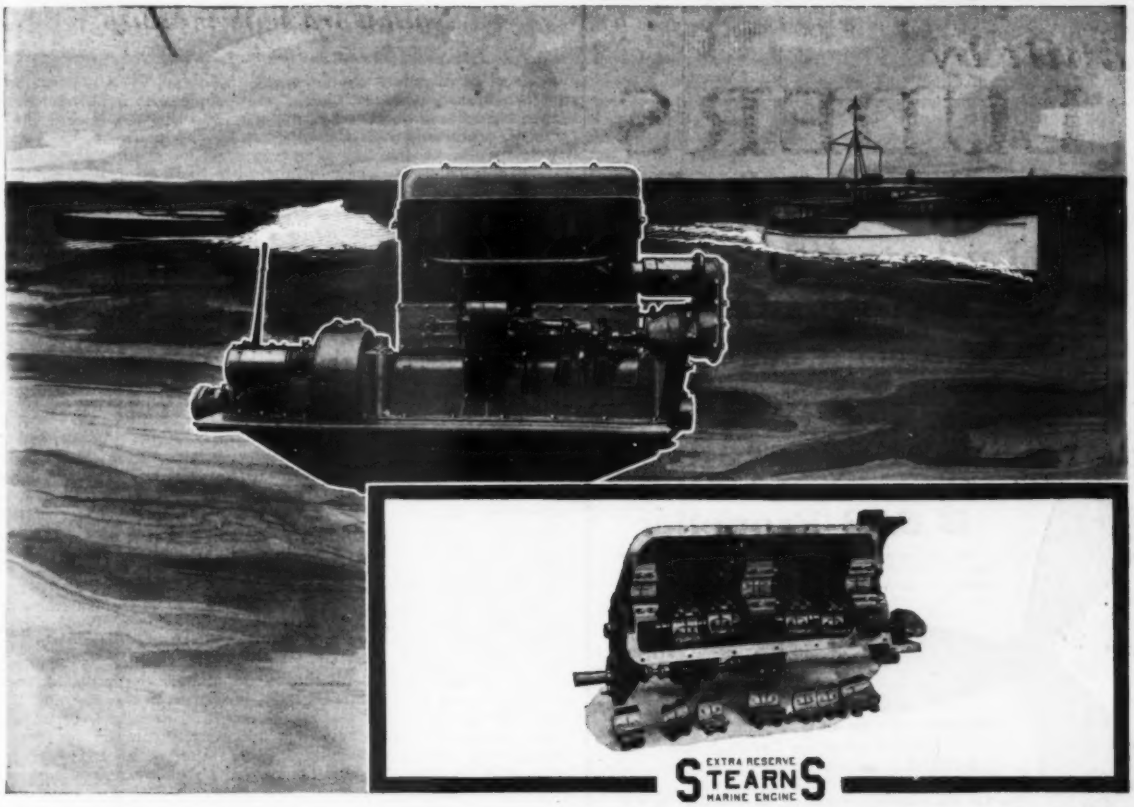

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Southward with the Birds

(*Continued from page* 106)

a street-car running over from Wilmington, N. C.: a summer resort, in a few words, with a few people who hang over from the season and on through the winter. But the inlet itself is considerably worse than Bear and has no marks of any kind. When we sighted it, the wind was freshening up and the waves were rising with it: they seemed to break indiscriminately, here and there, without leaving any definite channel open to passage. So we followed the directions of the Pilot Book: "Pass the inlet and skirt the shore below, till abreast of the hotel; then turn sharply north and proceed close along the shore to follow a channel between the shore and a long sand-spit, extending from the dunes to the north of the inlet all the way across its entrance." Very clear and simple, but also quite untrue: the channel has turned east across the spit about half a mile above the hotel (abreast of the first little shack on the island) and a new spit has arisen, stretching from the shore not far above the hotel, straight across the old channel. We made directly across this newly formed spit, without being aware of its presence, which the troubled waters concealed. When we got on top of it, a huge wave, higher than our deck, broke right over us, deluging us with real green salt water. I was standing on the deck, when the wave came rushing toward us and for a moment I had the vision of some phantastic creature, trying to grab us with its monstrous claws: I felt an irresistible force grip and swing us around: I heard a loud crash of tin and iron and crockery: and, as I was holding fast to the nearest stanchion I could clutch, through the shower of water I saw us land flat on our port side. The question flashed through my mind: "Are we going to turn turtle?" The answer came in a fraction of a second when the boat righted itself with a violent lurch that threw us, in a heap with furnishings and sundries, to the starboard. The seven pigs of the ballast had saved us: bless 'em! Luckily, we had not struck bottom. Under the steady impulse of the propeller, that never faltered an instant, the boat passed over the spit and into navigable water. But, there and then and drenched, I resolved that, henceforth, whenever I try the sport of running an inlet, I shall do it in a sportsmanlike manner; that is, according to my own ideas. And the pilot books will be closed books, and the charts, rolled charts.

It did not take very long for our stern resolution to be put to the test. Wrightsville Inlet held us for a couple of days, just enough for the fierce blow from the west to give us a little surprise and then pass out to sea. I said above that the tides are always uncertain quantities, as extraneous factors enter to modify their theoretical and machine-determined heights. Where the waters are shallow and the coast very flat, as it is along the Atlantic, the winds often have more to say than the moon as to what flood and ebb should do. Thus it happened that, one night, the west wind swept almost all the water out of Wrightsville Inlet, quite regardless of what the Tide Tables had to say on the subject, and we, were moored to the friendly dock of a hospitable doctor, found ourselves sitting on the hard ground by the sides of the tall piles, encrusted with coon oysters and bored by teredoes. We even had to get up and tie ourselves tight lest we topple over. The ignominy of it! We looked like a wagon more than a boat, and all because of a west wind that did not mind a particle what rules the government had set for it.

The wind passed out to sea: we passed also. Our next destination was Southport and between us and our destination stood the most dreaded part of the whole trip, Cape Fear. The name of itself is rather fearsome, and the natural setting of the cape is not such as would materially improve such an impression. The cape is a low, sandy island, which dissolves into marshes on the land side, and trails into a long, broad shoal, stretching some ten miles toward the open sea. To this shoal has been given the picturesque name of the Frying Pan, presumably because the water, always restlessly in motion, boils over it like fat in a hot pan: even on a quiet day, one can see the waves break for miles in disorder all over the shoal, shooting tufts of white foam into the air, striking each other and tumbling and sending forth a continuous sizzling roar that can be heard from afar. The sight is quite imposing, almost forbidding, as one beholds it from the deck of a little ship in the immediate neighborhood: needless to say, one cannot go through all that turmoil. There are three ways of getting around the obstacle: one is turn it on the outside, the other is to avoid it altogether by going through a shallow inlet across the marshes to the north of the island, and the third is to follow a natural channel good for about eight feet of water, which zigzags through the shoals not very distant from the shore of the cape itself. The first way being too long and the second impassable at low tide, we chose the third one, which is also the most spectacular. The tall, skeleton lighthouse of Cape Fear guiding us, we reached the outskirts of the shoals without incidents. All was well, except for an unexpected performance staged on a sudden on the southwestern horizon toward which

(*Continued on page* 110)

Advertising Index will be found on page 122

MOTOR BOATING PRACTICAL HAND-BOOKS

Every motor boatman has long felt the need for a really complete and comprehensive library devoted to their favorite pastime—motor boating. One of the obstacles to the accomplishment of this important work was the difficulty in finding any one writer who could cover the field in its entirety. In presenting the new series of practical hand-books, MoToR BoatinG believes that the problem has been solved at last. These books are edited by Charles F. Chapman, M. E., the editor of MoToR BoatinG, and they are the results of months of untiring effort on his part, together with the best of thousands of suggestions sent to him by motor boatmen themselves. The list of the contents given below will give you some idea of the vast amount of ground covered by these volumes.

Practical Motor Boats and Their Equipment

Volume 1.—The first volume tells you what the ideal boat for various kinds of service should be and what to look for in buying a boat. Many suggestions about decoration and hints on all kinds of equipment. All about steering gears, wireless outfits, electrical attachments, etc. Glance over the list of contents appended herewith: Hulls, Ballast and Seaworthiness; Round Bottom *vs.* Sharp Bilge; What are the Advantages of Flare? Raised Deck *vs.* Trunk Cabin; Best Proportion of Beam to Length; Selecting a New Design; The Advantage of Bilge Keels; Open or Solid Deadwood? What Makes a Hull Seaworthy? The $1,000 Cruiser; Buying a Second-Hand Boat; Types of Bows and Sterns; Exterior Arrangement of Cruisers; The Best Cabin Arrangement; Finishing Up the Cabin; Changes in Interior Arrangement; Interior Arrangement for Open Boat; Propellor-Rudder Arrangements; Best Position for the Rudder; Advantages of the Outboard Rudder; Different Steering Positions; Steering Equipments for Motor Boats; Steering Gear for the Cruiser; The Steering Gear for a Runabout; Steering the Boat from the Side; The Electrical Equipment; Making and Wiring a Switchboard; Electric Lighting on a Motor Boat; The Inexpensive Lighting Outfit; Wiring the Small Cruiser; The Storage Battery; The Dynamo Cut-Out; Wireless for a Small Cruiser; Tender for a Thirty-foot Cruiser; Building a Folding Dinghy; Installing the Boat Boom; What is the Best Galley Arrangement; Ventilating the Galley; The Galley Stove and Its Installation; Making a Fireless Cooker; A Portable Cook Box; Running Water for the Cruiser; How to Build a Portable Table; A Table for the Open Boat.

Practical Motor Boat Building

Volume 2.—As its title implies, this volume takes up the building of your own boat. It also covers the construction of the necessary fittings such as awning, windshield, etc. Every boatman sometime or other builds a boat, and a book of this kind will save much time and prevent many mistakes. List of contents: Types of Motor Boat Fastenings; Boat Building Woods; Laying Down a Boat's Lines; Converting a Trunk-Cabin Cruiser; A Steam Box for Amateur Builders; Joiner Between Stem and Keel; Fastening the Frames and Floors; Boring the Forgotten Limbers; Fitting the Garboard Plank; Boring the Shaftlog; Fitting the Stuffing Box; The Stern Bearings for a Cruiser; A Water-Tight Companionway; How to Canvas a Deck; Hinged Water-Tight Hatches; Making a Water-Tight Hatch; The Coaming of an Open Boat; Fitting a Swinging Port Light; Making a Self-Bailing Cockpit; A Water-Tight Window Sash; Making a Water-Tight Skylight; How to Build an Engine Housing; How to Make an Engine Cover; Building a Tool Locker; Constructing an Extension Transom; How to Make a Pipe Berth; An Ice Box for a Cruiser; Installing a Toilet; How to Rig a Signal Mast; How to Make a Spray Hood; Fitting a Folding Windshield; An Awning for the Open Boat; A Cover for the Open Cockpit; Screens for the Side Light; A Support for the After Light; A Seat for the Man at the Wheel; Removable Davits for the Cruiser; The Boarding Steps; A Bow Rudder for Your Hydro; The Motor-Driven Club Tender.

Practical Things Motor Boatmen Should Know

Volume 3.—Navigation is one of the important subjects covered in volume three of the series. Tells you how to steer, how to increase the factor of safety, and a host of other things relative to the proper running of your boat. The chart and compass are both fully explained in a clear and comprehensive manner. The list of contents will tell you more about it: Advice for the Beginner, Lessons Learned from Experience; Good Things to Know; Increasing the Factor of Safety; Which Way Should the Boat Steer? Why a Boat Steers Badly; Why do Boats Squat? Figuring the Boat's Speed; Ballasting the Cruiser; Getting Off Bottom; To Ride Out a Storm in a Motor Boat; The Why and How of Storm Oil; Preventing Fire; Handling Ground Tackle; Government Charts; Stowing the Anchor on a Cruiser; Diminishing Deviation; Preventing Electrolysis; Stowing and Using Charts; How to Make a Chart Case; Keeping a Motor Boat's Log; How to Make a Sextant; Tides and Tidal Waters; Taking Her Through the Canals; The Best All Round Dinghy; Towing the Tender; Handling the Dory in a Seaway; Getting the Tender Aboard; Planning for a Cruise; Equipping for a Cruise; Equipment for Offshore Cruising; Novel Events for Regatta Day; Handicapping; The Object of a Handicap Rule; Laying Off a Race Course; Measuring the Length of a Race Course; Preparing a Boat's Bottom for a Race; How to Build a Turning Buoy; Starting Boats in a Race; Stowing the Signal Flags; Fitting a Gun Mount; A Fish Box for Your Cruiser; A Cabin Wall Rack.

Practical Marine Motors

Volume 4.—All about the marine motor; what it should and should not be. Tells why the automobile engine is unsucessful in marine work. The best location for your engine, the ideal engine bed, the fuel tank, exhaust and countless other suggestions that will enable you to get the best results from your power plant. List of contents: Purchasing a Marine Motor; How Many Cylinders? Power per Cylinder; High Speed *vs.* Heavy Duty; Long Stroke *vs.* Short Stroke; Correct Motor Design; Changes in One's Power Plant; The Things that Cause Vibration; The Automobile Engine for a Boat; The Best Position for the Motor; The Ideal Engine Compartment; Placing the Engine in the Hull; Installing a Motor in a Canoe; Installing Power in a Yawl; Converting a "Banker" to Power Engine Installation in a Hydroplane; Putting Power in the Rowboat; Limits of Shaft Inclination; Constructing the Engine Bed; Getting the Motor Aboard; Lining Up the Propeller Shaft; The Best Exhaust; Mufflers *vs.* Under-Water Exhausts; Installing an Under-Water Exhaust; Primary Batteries for Ignition; Keeping the Ignition System Dry; Installing a High-Tension Magneto; From Make and Break to Jump Spark; Installing the Gasoline Tanks; Taking care of Extra Gasoline; Spark and Throttle Controls; Constructing a Rear Starter; Propeller for Engine and Hull; Installing a Universal Joint; Gearing Motor to Propeller Shaft; The Automobile Throttle; Harnessing the Main Engine; Rebabbitting a Worn Bearing; Should Fuel Line be Inside or Outside?

Practical Motor Operation and Maintenance

Volume 5.—One of the most valuable books of the entire set. Your motor's ills and how to cure them. This volume tells you how to adjust your carburetor, how to fit piston rings, how to remedy poor compression and a number of other things that will enable you to doctor your own motor. List of contents: Locating the Motor's Troubles; The Overheated Motor; Starting in Cold Weather; Overhauling a Marine Motor; How to Save Fuel; The Fuel Situation; Using Low Grade Fuel; How to Run on Kerosene; Supplying the Fuel to the Carburetor; Adjusting the Carburetor; Cleaning the Fuel Tanks; Cleaning the Gasoline Line; Stopping Up the Leak in the Tank; A Home-Made Gasoline Gauge; Carrying an Extra Supply of Oil; Mixing the Fuel and Lubricant; Remedying Leaky Compression; Killing the Carbon Jinx; Tool and Spare Parts to Carry; Removing and Replacing Piston Rings; Repairing a Leaky Cylinder; Grinding a Motor's Valves; Setting the Valves; Timing the Ignition System; Cleaning the Water Jacket; Making and Fitting a Gasket; Patching Up a Bearing; Straightening the Sprung Shaft; Truing a Bent Propeller; Removing the Flywheel; Separating Couplings and Pipe Fittings; Changing the Shaft Hole Location; Utilizing the Exhaust; Disposing of the Bilge Water; Heating a Small Cruiser's Cabin; Operating the Outboard Motor; The Clean and Quiet Boat; Charging a Storage Battery; When the Motor Stops Unexpectedly; Making a Unit Power Plant.

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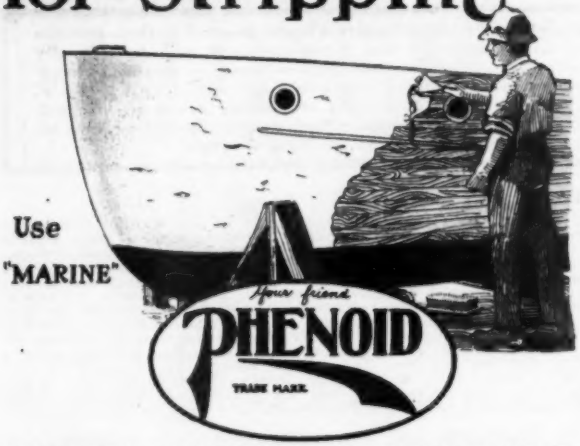

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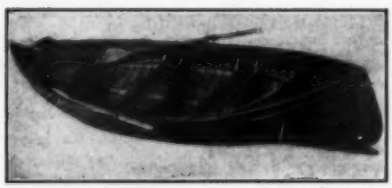

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Southward with the Birds

(Continued from page 108)

we were moving. It had been covered all day by low, overhanging, dark clouds and the sun had disappeared into it, leaving the scene gray and cheerless, in a sort of sullen stillness: then, at a stroke, it cleared away and the sun shone so brilliantly over the gaily tossing white tops of the Frying Pan that it looked like a vast assemblage of ladies in laces and ruffles, all merrily dancing about. We did not like the sudden transformation: it could mean only one thing, that the west wind, stilled for the day, had reappeared in a blast from a somewhat more southerly quarter and was mussing things up somewhere, as the Southwester is wont to do. Yet the sea was quiet in our neighborhood, and the brightness of the sun was cheery and encouraging. So we proceeded on our way and in due course we picked up the buoy that marks the entrance to the channel, the Swash, as they call it. From there, having properly set our course by the compass and having called into play our binoculars, we went out to find the second buoy, which, on the chart, lay close by the first barrier of breakers. But go as we might, and look as we would, we could not find any buoy: twice we almost reached the waves beginning to rear like frightened horses and twice we returned to the point of departure; but the buoy—as the saying goes—was conspicuous only by its absence. Then I remembered my vow, the vow of the inlets: I clapped the Pilot book shut, I rolled up the chart; with the conscious step of a hero, I climbed out of the cockpit to the deck and gave my order: "Full speed ahead!" And on we moved to confront the dancing ladies of the shoals. We did not intend to meet them: in fact, the point was, to avoid them most sedulously as we threaded our way among them and kept our bark on the rounder waves that did not break. We never met them: but they gave us a dance just the same. There was one spot where the passage between the shoals was at its narrowest: the dancing ladies on one side were so near to the dancing ladies on the other side, that I wondered for a moment whether we could escape the charming invitations besetting the narrow path from both sides: I felt like the mariner who heard the sirens of Scylla vie in songs with those of Carybdis, or like the Pilgrim passing between the chained lions on his way to the Porter's Lodge of the Beautiful Palace. After the passage, the Swash soon came to an end, where it opened on deep waters again, and the shoals were left behind us: then I fetched again the Pilot book and displayed the chart over its wonted board. But a new situation was before us: the sea beyond the shoals was extremely rough, as rough on this, the western side of the shoals, as it had been quiet on the eastern: and we knew by experience, not only by surmise, the true meaning of that sudden clearing of the clouds, of which we had enjoyed the sight but not relished the thought. I had heard before of the effects of shoals in protecting waters to their leeward: I had seen even real harbors depending on such protection—Key West, for instance. Pamlico has one such a place in the Royal Shoal Harbor, where ships are advised to call for shelter, behind a thin ridge of submerged sand. But I confess that I had never thought much of such harbors: now, even though I may continue to prefer a shelter of a more substantial type, I realize what a shoal can do to hold back the lashing fury of a storm. It would have been pleasanter to proceed from the stormy side to the quiet side of the shoal, rather than viceversa: still, there was no choice. We did not fancy the idea of retracing our steps among the dancing ladies and, moreover, there would have been no place to go to on the lee side of the shoal: so we pushed on. A gleeful voice called from the cockpit: "We have fallen from the Frying Pan into the fire, Captain!", and that was sign of high spirit in the crew. We did not mind the bouncing, neither did the motor, and on we went: but if anyone watched us from the near by lighthouse, he must have thought us an interesting sight, churning among waves much higher than ourselves that tossed about like a football. Gradually the seas diminished, and then sharply changed from the deep green of the ocean to the deep brown that heralded the muddy current of a river and two hours later we were making fast to a dock in Southport.

Thereafter, things were easy. Little River Inlet offered no difficulties: it is broad, deep and well buoyed. We found this out even while we faithfully adhered to our vow of the inlets: the buoys came to meet us, so to speak. The only objection to them was that their paint was gone and their rusty nakedness, at first sight, left one in doubt as to whether they were meant to be starboard or port buoys. The weather held us blocked in the Inlet for five days to commune with derelict farmers—derelicts with motor-cars—and wonder at their prosperity, and rejoice in the generous hospitality of their simple homes. Oysters were ours for the picking, ducks were ours for the shooting, fish was ours for the angling, many other things were ours for the asking: that was easy life indeed, even though the north wind did blow.

The last long stretch of open water brought us to Georgetown,

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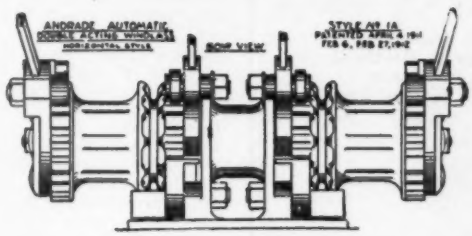
TRADE MARK



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No. 8—Delaware Bay.
No. 9—Chesapeake Bay, Part 1, Upper Part.
No. 10—Coast of Maine, Portland to Rockland.
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No. 12—Chesapeake Bay, Part II, Central Part.

Series B

No. 13—Lake Erie—Eastern Part.
No. 14—Lake Erie—Western Part.
No. 15—Hudson River, New York to Kingston.
No. 16—Lake Champlain.
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The third series of MoToR BoatinG's popular charts begins with No. 25, which covers the Delaware River from Trenton to Philadelphia. Others in this series which follow will complete the route to the sea via the Delaware River as well as cover many interesting stretches of cruising waters on the way south and along the coast. It is planned to issue these about as listed below:

No. 25 Nov., 1921..Delaware River, Trenton to Philadelphia.
No. 26 Dec., 1921..Delaware River, Philadelphia to Smyrna.
No. 27 Jan., 1922..New Jersey Coast, Cape May to Little Egg Inlet.
No. 28 Feb., 1922..New Jersey Coast, Little Egg to Barnegat Inlet.
No. 29—March, 1922.New Jersey Coast, Barnegat Inlet to Sandy Hook.
No. 30 April, 1922.Chesapeake Bay, Smith Point to Cape Charles.
No. 31 May, 1922..Potomac River to Lower Cedar Point.
No. 32 June, 1922..York and James Rivers.
No. 33 July, 1922..Delaware Coast, Cape Henlopen to Chincoteague Inlet.
No. 34 Aug., 1922..Virginia Coast, Chincoteague to Cape Charles.
No. 35 Sept., 1922..Virginia Coast Cape Henry to Albermarle Sound.
No. 36 Oct., 1922..Albermarle Sound, North Carolina.

Log Book

MoToR BoatinG has also published a log sheet to fit the standard 8½" x 11" loose leaf folder. Each sheet contains spaces for such data as time of passing various aids to navigation, names of aids, magnetic and compass courses, distances, patent log readings, speed of boat, revolutions of motor, wind direction and force, condition of weather and sea, depths of water, fuel, time of high and low water, etc., etc.

Prices

Charts 25 cents each or $1.50 per set of 12, 36 Charts for $3.50 (Series C will be sent as published). Log Sheets $1.00 per set of 50 Sheets.

Loose Leaf Binders (canvas bound) to hold Charts and Log Sheets, $1.75.

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Southward with the Birds

(Continued from page 110)

S. C. and to the second section of the inside route. From there it was plain sailing, on a really inland waterway. Not that that part of the trip is without its dangers: it has its own difficulties, but they are not the difficulties of the open waters. The dangers of those southern waters are the dangers of heavy tides and swift moving currents and high winds: they are the dangers of excessive relaxation after the outside run and the consequent slackening in watchfulness: they are, above all, the dangers of shallow waters. Very lucky, or very wise, is the pilot who makes the southern trip without piling up on some bank, with more or less damage to the skin-deep beauty of his ship: but even piling up is an infirmity to which one gets used after a while.

Since then I have run a-ground more than once, I shamelessly avow. But as long as no breakers are near, I do not worry: I know I shall be floating in a few minutes if the tide is rising: and, if the tide is falling, I carry the anchor as far as the supply of rope on board will allow and drop it into the channel: then I go to sleep. I know that the morning will find me tugging at my anchor like a tethered cow, but as free to move about as the rope is long. On our way down from Georgetown, we came to the mouth of Alligator Creek as the tide was at its highest: the water was over the flats and I hesitated an instant to reconnoitre the way by the beacon that marks their ends. That sufficed for the rapid current to catch and throw us upon the oyster bank near by: and there we safely and firmly stuck for the next seven or eight hours. Down went the anchor into the deeper channels: then we laid ourselves at rest, not forgetting, however, to take on board a load of oysters big enough for several meals, as soon as the receding waters left the reef high and dry: since we had to sit for half a day on those oysters, we took what revenge we could on the offending beasts. And, at night, we bobbed up, ready for new exploits and with only one regret—that a fellow yachtsman who had tried to rescue us from our predicament, got into the same trouble and had to share our hold-up. But then, a sportsman is like a knight of old: he goes out into the world for adventure, he dares anything to help the poor and the bereft, he welcomes any hardship he meets on his quest. Besides, he also got a load of oysters—and they were good.

The trip proceeds through most interesting scenery, radically different from anything we had passed in the north. Up rivers and far inland, at times, where the water is fresh and rice grows in the meadows: then down through the salt marshes and along the sandy islands by the seashore—many of them, hunting preserves of clubs and wealthy men: now through channels so narrow that the boat rustles the reeds on both banks, as it goes: and again along broad reaches and bays and sounds: one day through pine woods and the next by shores lined with palmettoes. On and on, to where the orange groves make their appearance on the banks, and the mangroves take the place of the reeds and the tarpon makes serious men entirely oblivious to themselves and the world. But before this last stage of the journey is reached, one crucial point must be passed on the way: Charleston.

Charleston seems to be the rock on which the Florida trips most frequently founder. Whether it is the strain of the long voyage that comes to the surface, or the additional tenseness of the outside pasage, or the under-estimation of the enterprise, if there was anything wrong at the start, or if anything wrong developed during the trip, Charleston is the place to provoke a crisis.

We know of many crews that have split up in Charleston harbor: among them the gallant crew that had tried to rescue us at Alligator Creek and the crew of a boat that we rescued in Cape Romaine Bay, when a rope fouled their propeller. We also knew of some yachts, elegant and otherwise, that had to put into Charleston Harbor for extensive repairs:—paying for previous giddinesses, I fancy.

Our own trip ended in Charleston, though we were originally bound for Florida. In our case, there were no dissensions among the crew; the charms of Charleston held us, and the crew agreed on this point, unanimously. So that, after all, it was neither the sand of Florida nor the water of North Carolina that worked their magic: it was the mortar and bricks of handsome Charleston that beguiled us: the brick and mortar, and the hearts that beat within.

That, however, is another story. The tale of the voyage endeth here.

Technical details. Cruiser, round bilge, 28 ft. long, 8 ft. beam, 3 ft. draft. Engine, 11 HP., two-cylinder, two-cycle. Distance covered during cruise, 1200 miles: gasoline used, 285 gallons, oil 12 gallons. As the total running time was slightly in excess of 180, this gives a total consumption of somewhat less than a gallon and a half an hour of gasoline, or under a pint per hour and HP—a very low average for a two-cycle engine. No repairs were needed.

Lesser draft would be useful on occasions, but is not advisable for work in rough waters.

Advertising Index will be found on page 146

Gray

VALVE-IN-HEAD MOTOR

Operates on Gasoline Distilate or Kerosene

10 to 25 H. P.

A Clean—All Enclosed Motor—Yet Accessible

OUR sixteen years experience in maintaining an exclusive Export Department, studying the details that are so necessary in giving excellent service to all our Foreign friends and from the fact Gray Engines are in satisfactory every day service throughout the world insures your business being properly taken care of.

The new Gray 4-cylinder, 4-cycle engine has 1922 engineering features, guaranteeing long life, economy and dependability. It is suitable for runabouts 20 to 30 ft. in length; small cruisers up to 34 ft., also work boats. Note the rigid one-piece base with reverse Gear enclosed.

The Gear is automatically lubricated with positive gear pump that lubricates all other internal working parts of the engine—no grease cups or thick transmission oil used.

Oil filler is conveniently located on top of engine with duct leading to Crank Case. Rocker arm shaft is hollow and automatically supplies oil to Rocker Arms. Oil is forced under pressure to the three main bearings, and to the connetting rod troughs.

In brief, the Gray Oiling System leaves nothing to chance. It is unfailing at all engine speeds, and all oil is kept inside the engine, and not thrown around the boat or on its occupants.

The fly wheel is enclosed, affording *safety* and *cleanliness*. Bilge water cannot be thrown by the fly wheel. Every working part is enclosed; even the push rods. Due to the special design of the Cam Shaft, push rods and rocker arms, scarcely a sound can be heard with the ear close to the engine.

Its smooth, quiet operation at all speeds from 200 to 2,000 would compare favorably to an electric motor.

This Gray Improved Valve-in-Head operates most economically on the low grade gasoline and satisfactorily on kerosene.

The diameter of the main bearings are:

Front 2⅛". Centre 21/16". Rear 2". The lengths are 3⅜", 2½", 2½" respectively.

Crank shaft is 40-50 point carbon steel forging, heat treated and ground.

Special attention is given to the balancing.

Bosch Magneto with Impulse Starter, also Bosch two unit Starter and Generator is used.

Write for FREE Literature

Gray reliable Two-Cycle Motors are built in models from 3 to 8 h.p.

Prices Low—Consistent with Quality

GRAY MOTOR COMPANY, 2106 MACK AVE., Detroit, Mich.

Great Circle Sailing

(*Continued from page* 104)

as far as practicable avoided by a judicious selection of such courses, whether great circle or rhumb, as may best give promise of safety and expedition.

The great circle track, or sufficient of it, having been laid down on the gnomonic chart, the great circle course may be measured by a special rose printed on the chart. The chart gives directions for using the rose, which is entirely different from the roses appearing on Mercator or polyconic projections. Also great circle distances may be measured, by methods explained in footnotes on the chart. But these methods are somewhat cumbersome, and the writer believes it preferable to compute the great circle distances by the cosines-haversine method hereinafter explained.

Having used the great circle chart to find the great circle track, it is then transferred to Mercator chart for sailing purposes. To make such transfer, it is merely necessary to note the latitude and longitude of the place of departure, and of some point along the great circle, say 150 to 200 miles therefrom. Then mark these two positions on the Mercator chart, and connect them with a pencil line. In like manner, other portions may be transferred. The initial course, or the course of any part so transferred, may then be measured on the Mercator chart, with parallel rules or protractor, in the ordinary way, thus obviating the need of using the special great circle chart rose. In other words, the great circle chart may be used, if desired, merely to obtain the co-ordinates, latitude and longitude, of convenient points along the great circle track; and with these co-ordinates the track may be transferred to a sailing chart, upon which all the rest of the work may be done direct.

Great Circle Course By Azimuth Tables. The great circle course may readily be found by azimuth tables, such as published by the U. S. Hydrographic Office. (H. O. Publications 71 and 120.) Azimuth tables form part of the regular equipment of any ocean going vessel, and their use for the great circle problem does away with the necessity of procuring special tables.

With these tables, the writer believes, great circle courses may be found quite as readily as with gnomonic charts, and with even greater accuracy. But using azimuth tables to find great circle courses, is much like using Table 2 to solve the Middle Latitude problem. The azimuth tables were gotten up for the purpose of finding the azimuth, or true bearing, of celestial bodies, and they are arranged with headings and terms such as are used in nautical astronomy.

On the assumption that the student may not have an azimuth table at hand, we reproduce two pages of H. O. Pub. No. 71 which will suffice for illustration purposes. Figs. 33 and 35.

That the plan of the table may be fully understood, we hed best explain the azimuth problem. It is illustrated in Fig. 132. L represents the latitude of the observer, that is, the latitude at ship, D the declination of the heavenly body, PL and PD meridans or hour circles, t the hour angle at the pole, and Z the angle of azimuth, or the angle between the observer's meridian and the line of bearing of the observed body. This angle the table gives by inspection.

To use the azimuth table the navigator enters it with three arguments, or elements. He has:

1. The latitude; that is, the latitude of the observer, the latitude at ship.
2. The declination, which is the angular distance of the heavenly body north or south of the celestial equator. It practically corresponds with latitude on the earth.
3. The apparent time or hour angle, which is the angle at the pole between the hour circles, or meridians, which pass through the observer's position and the observed body.

With these three arguments, he goes into the table and takes out the azimuth. The procedure is as follows: He opens the book of tables to the page representing his latitude, there being a separate page for each degree of latitude. Fig. 33 shows half the page for Lat. 41°. On this page he finds many columns headed with the declination, from 0° up to 23°. (Let us here note that Pub. No. 120 carries the declinations from 24° up to 70°.) At the side are columns headed "Apparent time," or, in Pub. No. 120, "Hour angle." Now, on the proper Lat. page, under the proper Dec. column, and on a line with the proper hour angle, or time, he reads at a glance the azimuth, in degrees and minutes of arc. The hour angles are arranged in 10 minute steps, and if he wants to get the value of intermediate minutes, he may interpolate. But in this table, interpolation is easy. Suppose, with Lat. 41°, Dec. 19°, hour angle 3h 10m (use right hand apparent time column), the azimuth is 103° 58′, and for 3h 20m, it is 101° 56′. He perceives at once that the difference for 10 minutes of time is 2° 02′ or 122′ of arc. For 1 minute of time, it is 1-10th this difference. Suppose his true time is 3h 16m. He very quickly goes through this mental process: Diff. for 10m, 122′; diff. for 1m 12′; diff. for 6m, 72′. Subtracting (as the azimuth is decreasing as the time increases) 72′ from 103° 58′, leaves 102° 46′. But he does not need it so precisely. It is sufficient to have it to the nearest even degree; and, with experience, he will perceive almost at once that his azimuth to the nearest degree is 103°. If his declination were say 19° 15′ he would take his azimuth out of the 19° column, with a glance at the 20° column alongside, to see if the change for a degree of declination made enough difference to take account of. And if his latitude contained some odd minutes, he might also look at the figures on the page for the next higher or lower degree of latitude. Now, it might be somewhat laborious to make these interpolations down to absolute accuracy. But that is unnecessary. The change in azimuth for 10 minutes of time, and for a whole degree of Lat. or Dec. is generally a matter of only a couple of degrees. And with experience, the result may be taken out roughly, but to the nearest degree, almost at a glance.

Now refer to Fig. 34 which illustrates the great circle problem, and you will perceive that it is precisely the same sort of problem as the azimuth one, but with changed names for some of the elements employed. That is to say, it involves the same sort of spherical triangle, the great circlel course angle corresponding with the azimuth angle. While the azimuth tables were prepared especially to solve the azimuth problem, they may be used to solve the corresponding angle of any like spherical triangle; much as Table 2, though prepared for plane sailing, will also solve Middle Latitude and Mercator problems.

In Fig. 34, P is the pole, L^1 is the latitude of the ship (the same as in azimuth), L^2 is the latitude of the place of destination (instead of declination). The angle at the pole is the difference of longitude, or the angle between the meridians running through the ship and the place of destination, instead of the hour angle. Now, if we can keep these different names in mind, which is easy enough after a little practice, we can solve great circle courses very readily. All we need are our three elements:

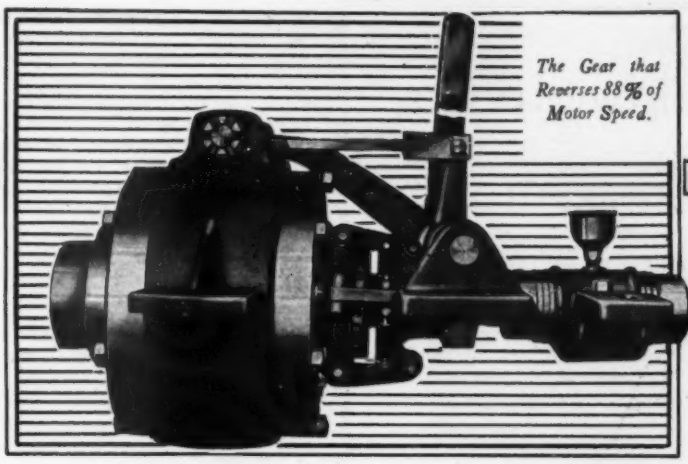
1. Latitude in, (L^1)
2. Latitude of destination, (L^2)
3. Differenc of Longitude, expressed in time.

In astronical problems, the polar angle is expressed in hours and minutes (time), instead of in degrees and minutes (arc), as in dead reckoning. Twenty-four hours equal a complete circle, instead of 360°, making each hour equal 15°, 1m=15′, and 1s=15″. But we need not bother to figure it out. Just turn to Table 45 (Bowditch, p. 817 et seq.) and right along side of degrees and minutes (arc) printed in heavy type at the top of the columns, read the corresponding hours and minutes (time) printed in italics.

With the above three arguments, we open the azimuth table to the page representing the nearest degree of our latitude in. Then find the Dec. column representing our

(*Continued on page* 116)

Advertising Index will be found on page 122



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CAPT. H. N. Nelson, South River, N. J., has used a Joes Reverse Gear in his 62-foot work boat, the E. F. Mead, for 5 years. He writes in part:

I run twin motors in this boat. The gear on the other motor is larger than my Joes, but I can tell you that the gear is just twice as fast on the back-up, and the brunt of my work has fallen on the Joes Gear, as a lot of my work has been to Seabright, N. J., on the Shrewsbury River, where in making landings we have both a narrow river and a four-mile current to contend with, and we always have to let 'Joe' do it.

Good As New After 40,000 Miles

"Recently I had the Remington people overhaul my motors, and look the reverse gear over as well, and this is what Supt. J. E. Brown said about the Joes Gear:
That 'if you rubbed the grease off and packed it in sawdust, you could not tell it from the new.'
And it will interest you to know that we have traveled something like 40,000 miles in the past 5½ years."

The captain's gear is a Joes Duplex Drive, unexcelled for medium and heavy duty work boat service.
Write for description and prices.

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Southern California—Fellows & Stewart, Inc., Wilmington.
Seattle, Wash.—Pacific Marine Engine Co.
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put it up to old man Joe

JOES FAMOUS REVERSE GEARS

80% - 88% REVERSE SPEED RATIO

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The Caldwell collection further includes articles for every use to which silver is adapted—tea sets, dinnerware, after-dinner coffee sets, dessert services, candlesticks, centerpieces, flower vases, epergnes, flat ware and servers, cigarette boxes, toilet requisites, etc.

Information, Illustrations and Approval Selections Promptly Forwarded

Next time you have to crawl out from under and get one more open-ender, remember this, A COES Wrench always fits, it always holds, and one of them will fit more assorted nuts than a double-handful of open-enders.

Ask Your Dealer

COES WRENCH COMPANY WORCESTER MASS.

Great Circle Sailing

(Continued from Page 114)

latitude of destination. Opposite the time or hour angle, equivalent to our D. Long. in time, read the initial great circle course, instead of the azimuth. Interpolate mentally to get the course to the nearest even degree. Mark it from north or south, toward east or west, in harmony with the directions printed at the bottom of the page. That is, if in north latitude, the azimuth, or in our case the great circle course, is reckoned from north toward east or west; while in south latitude, it is reckoned from south toward east or west. Thus, if we were in North latitude, and the initial course were 100°, and destination lay to the east of the ship, we would mark the course N 100° E, remembering that this would be equivalent to a course of 100° Navy style, or S 80° E, old compass style.

There is one further point requiring explanation. At certain seasons the sun is north of the equator, and at other seasons south. If the observer and sun are both north, or both south, then, in the azimuth tables, we use the pages headed "Declination—same name as—Latitude." See Fig. 33. If the observer is north and the sun south of the equator, or vise versa, then use the pages, in the back portion of the book headed "Declination—Contrary name to—Latitude." Now, the same scheme applies to our great circle problem. If the Lat. in and Lat. to are both of the same name, that is, both north, or both south, use the same name part of the table. If they are of different names, use the contrary name portion. Fig.32 shows a part of the table wih Lat. and Dec. of the same name, and Fig. 35 shows a page with Lat. and Dec. of contrary name,s.

Example 55. From Montauk Point(Lighthouse), New York, to San Antonio Island (Cape Verde Islands). Find initial great circle course by azimuth tables. (H. O. Pub. No. 71.)

Bowditch p. 282 Montauk Point, Lat. 41° 04′ N Lo. 71° 51′ 27″ W

Bowditch p. 303 San Antonio, Id., Lat. 17° 06′ 50″ N Lo. 24° 59′ 15″ W

D Lo. 46° 52′

D Lo. 46° 52′ by Bowditch Table 45, p. 848 = 3h 7m 28s. It is sufficient, however, to take it to nearest minute.

Lat. in, to nearest degree, 41° N
Lat. to, to nearest degree, 17° N } both of same name.

Use azimuth table for Lat. in of 41°, Lat. and Dec. of same name. Fig. 33.

Under Dec. column for 17° (corresponding with Lat. to) and opposite 3h 0m read course 108° 15′
and opposite 3h 10m read course 106° 05′

Diff for 10m 2° 10′ = 130′
" " 1m=13′
" " 7m=91′ = 1° 31′

Take course for 3h 0m 108° 15′
Deduct for 7m (because angle decreases as time increases) 1° 31′

Course for D Lo. 3h 7m 106° 44′

Ship is in N Lat., and destination is to eastward. Hence, mark initial course N 106° 44′ E

Set down in full, with explanations, the solution is not lengthy. But in practice, most of it would be done mentally. Since the Lat. to is 17° 07′ instead of 17° even, we might look in the 18° Dec. column against 3 hrs., and observe that the change for 1° of Dec. is 64′. For 7′, the change would be 7/64ths of a degree or about 7′ which we could deduct from the course as found above. Or, it could be disregarded as negligible.

No one need take alarm because the course is computed from the lighthouse, a point on shore. No doubt the vessel would have an offering of a mile or two at least. We certainly hope so! But a trifling difference of this sort would not appreciably affect the course on so long a voyage.

Example 56. From San Francisco (the Presido) to Ovalu Island, Levuka Lighthouse (Fiji Islands). Find initial great circle course by azimuth table.

(Continued on Page 118)

"Say Dad, that new Universal engine is a darling."

An engine you will be proud of

You can't talk with the owner of a boat equipped with a Universal engine that isn't proud to tell you about it.

A Universal engine is something to be proud of. It isn't only a certain amount of power stuck into a hull to keep the hull moving, but it will give you this power with the least attention and trouble and is clean and easy to handle.

We, here in Oshkosh, are as proud of this product as you who buy it and use it. We know it is a corking good motor. We have been making marine motors here for years, and making them so well that practically every country of the world knows the satisfaction of Universal engine service.

There is only one quality and one size of Universal Marine engine—the 4 cylinder 9-12 h. p. One of the pioneers of its kind and the unquestioned leader of today. The Universal is adapted to 80% of them all—auto boats, launches, fishing boats, work boats—from 14 to 30 feet in length. It is equipped with electrical self-starter if desired.

Revised prices downward on Universal Marine Motors were put into effect January 1st. It will pay you to send for the Universal catalog today and get all the facts that will make you look forward with genuine enthusiasm to the ownership of a boat equipped with a Universal engine.

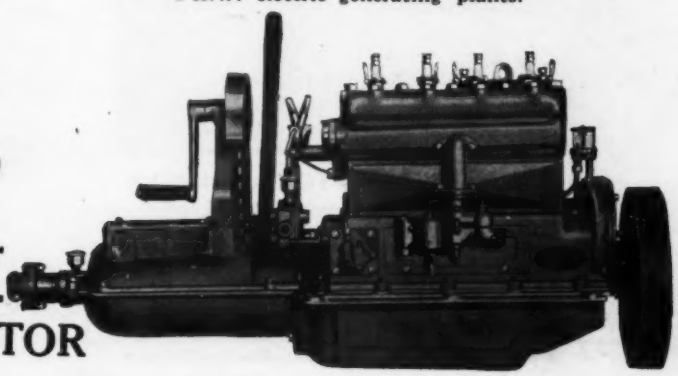
Universal Motor Co., Oshkosh, Wis.

Not connected with any other firm using the name "Universal"

Also manufacturers of Universal 4-K.W. and Unimote 2-K.W. electric generating plants.

Universal

4 Cylinder
9-12 H. P.
MARINE MOTOR



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Red Bank Sea Skiffs combine the staunchness and seaworthiness of the skiff with the speed of the modern high power runabout. The ideal inexpensive fast boat, giving all the sport without the expensive frills and mahogany finish.

26' x 6' Standardized Sea Skiff, seats 10

20 M.P.H. with 50 H.P. 35 M.P.H. with 200 H.P.
30 M.P.H. with 100 H.P. 40 M.P.H. with 300 H.P.

Makes an excellent yacht tender when fitted with hoisting irons. Hull complete except engine, shaft and propeller, $900. (Including tax). Will install your motor for $100. Order now for Florida delivery.

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Warm, Comfortable, and Cold Proof

All-wool, closely woven. One piece, including hood. Two pockets. Gray-drab. Hood equipped with draw-string, making it snug-fitting around face and neck. Slips on like sweater; no buttons. Thoroughly tested by U. S. Govt. in North Seas.

Wonderful Weather Protection without bundling. Allows freedom of action. Heavily made for hard wear. Attractive. Order immediately. Supply limited. Give chest measurement. **Actual value $12.** Sent postpaid anywhere U. S. receipt of check, currency, or money order for..... **$5.90**

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THE SYNTONE RECEPTOR AMPLIFIER

A Quality Radio Receiving Set

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UNITED RADIO & ELECTRIC COMPANY
BROOKLYN, N. Y. 71 Sixth Avenue

Great Circle Sailing

(*Continued from page* 116)

Bowditch p. 289, San Francisco,
Lat. 37° 47′ 30 ″ N, Lo. 122° 27′ 49″ W
Bowditch p. 347, Ovalu Island,
Lat. 17° 40′ 45″ S, Lo. 178° 49′ 00″ E

301° 16′ 49″
360°

D. Lo. 58° 43′
By Table 45 = 3h 55m

Use azimuth table for Lat. in of 38°, Lat. and Dec of contrary names. Fig. 35.

Lat. to 17°, D Lo. 3h 50m, Course	124° 08′
Diff. for 10m, 27	
Diff. for 5m, 107÷2	— 54′
For D Lo. 3h 55m Course	123° 14′
Diff. for 41′ of Lat. to,	28′
	123° 42′
To interpolate for Lat. in: San Francisco is about 12′ or .2 of 1° S of Lat. 38°. Referring back to page of table for Lat. 37° (not printed herewith) we find that 1° of Lat. makes a diff. of—12.′ Hence, deduct .2 of 12′ or—	2′
Initial Course	N 123° 40′ W

EXAMPLES FOR PRACTICE

Find the initial great circle course, using the azimuth table method: (See Bowditch Table IV for geographical positions.)

Example 57: From Block Island, S. E. Light to Cape Verde.
West Coast of Africa. (Answer, Course, N 103° E, or 103°, Navy.)

Example 58: From San Francisco, Cal., The Presidio, to Tahiti, Society Islands. (Answer, Course, N 150°W, or 210° Navy.)

Example 59: From Humboldt, California, to Honolulu. (Answer, N 114° W, or 246° Navy.)

Example 60: Taking departure from Nantucket Shoals Lightship, sailed the following: C 111°, Dist 98.5; C 0°, Dist 17.3; C 71°, Dist 140. From Lat. and Long. than in, find initial great circle course to Cape Blanco Extreme, West Coast of Africa. (Answer, N 102°, or 102°, Navy)

Note: The next lesson will deal with methods of computing the great circle course and distance.

QUESTIONS ON LESSON NO. 7
MERCATOR SAILING

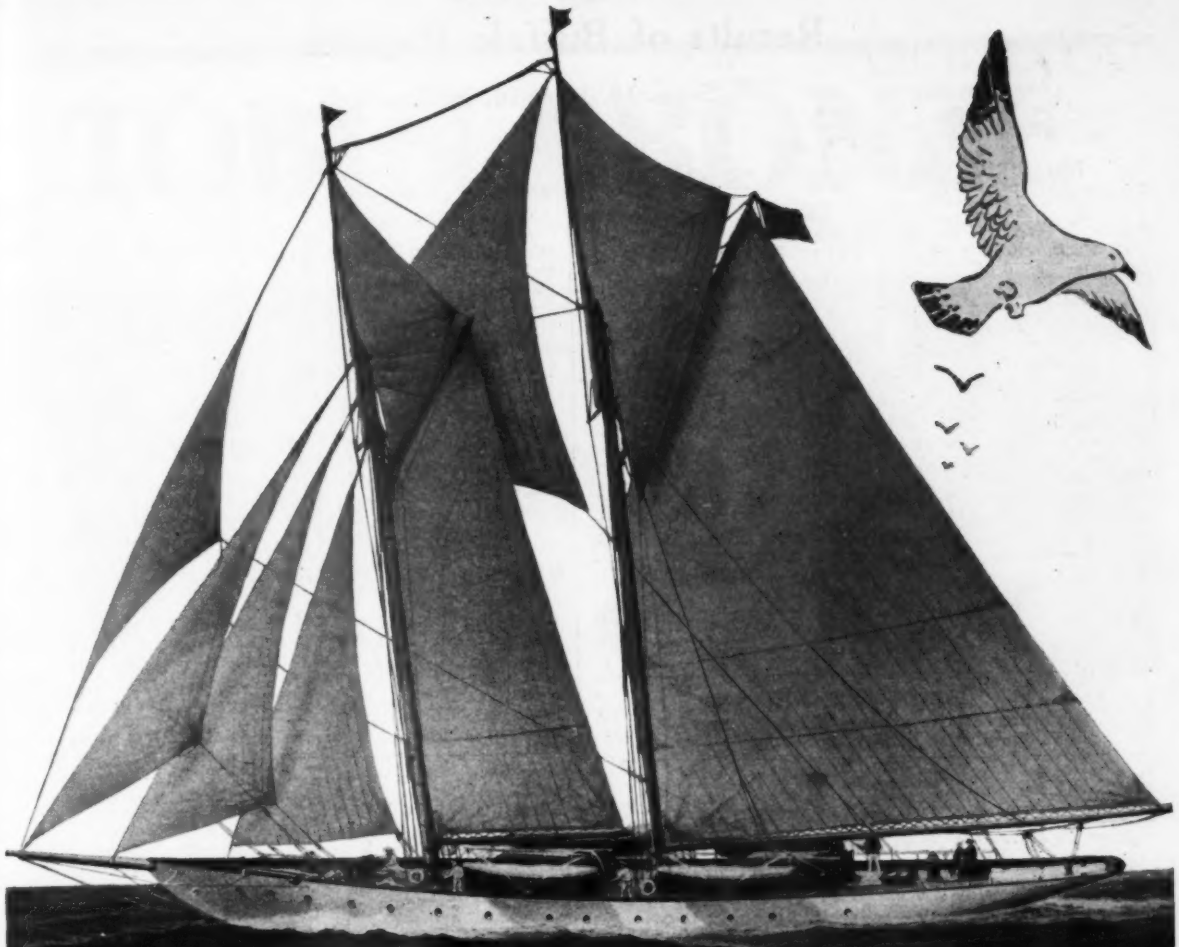
1. Explain the principle of the Mercator projection.
2. Where, on the chart, are the latitude and longitude scales found?
3. By what scale may distance be measured?
4. By what kind of lines are (a) rhumb tracks, and (b) great circle tracks, represented on a Mercator chart?
5. What are meridional parts?
6. In what cases may the Middle Latitude method be preferable to the Mercator? Explain.
7. Construct a Mercator chart covering Lat. 29° S to Lat 32° 30′ S, Long. 44° E to Long. 47° 15′ E.

Submit complete workings of the following, by Mercator method:

8. Compute throughout. Vessel in Lat. 39° 17′ N, Long. 164° 22′ W, sails N W x W 369.4 miles. Find Lat. and Long. in, and Course and Dist, from position so found to Lat. 46° 29′ N, Long. 162° 48′ W.
9. Solve by inspection throughout. Vessel takes departure from Frying Pan Shoal Lightship, with directions to take up position in Lat. 29° 58′ N, Long. 74° 20′ W. What will be her Course and Dist? From last position she sails as follows: C 143°, Dist 44.4; C 79° Dist 38; C 347° Dist 18. What is Lat. and Long. in?

Owing to the interruption caused by the absence of many examiners and others on vacations the usual list of names of successful students will be omitted from this issue. The November issue will give the complete lists for August and September.

Advertising Index will be found on page 122



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THE NEW LONDON SHIP & ENGINE CO. GROTON, CONN. U. S. A.

Results of Buffalo Regatta

Sept. 14, 15 & 16, 1922.

1100 CUBIC INCH DISPLACEMENT BOATS

Twenty miles First Heat

Boat	Late at Start	1st lap	2nd lap	3rd lap	4th lap	Total Elapsed Time
Nick Nack	0:07	7.19	7.24	7.16	7.21	29.27
Baby Gar Jr.	0:06	7.05	7.28	7.20	7.26	29.25
Sayanora	0:08	7.32	7.35	8.00	7.34	30.49

Second Heat 30 miles

	Late at Start	1st lap	2nd lap	3rd lap	4th lap	5th lap	6th lap	Total Elapsed Time
Nick Nack	0:02	7.21	7.14	7.19	7.16	7.18	7.17	43.57
Baby Gar Jr	0:01	7.08	7.15	7.27	7.15	7.11	7.26	43.53
Sayonora	0:02	7.36	7.36	7.36	7.36	7.37	7.35	45.38

Third Heat 30 miles

Nick Nack	0:02	7.19	7.20	7.20	7.19	7.18	7.19	43.57
Baby Gar Jr	0:02	7.11	7.13	7.23	7.21	7.12	7.31	43.53
Sayanora	0:02	7.41	7.36	7.36	7.33	7.32	7.33	45.33

Speed: Miles per Hour

	Best Heat	Best lap
Nick Nack	41.0	41.5
Baby Gar Jr	41.1	42.3
Sayanora	39.6	39.8

First prize won by Baby Gar Jr.
Second prize won by Nick Nack
Third prize won by Sayanora

625 CUBIC INCH DISPLACEMENT BOATS

1st Heat 20 Miles

Boat	Late at Start	1st lap	2nd lap	3rd lap	4th lap	Total Elapsed Time
Arab VI	0:08	7:42	7:54	7:45	7:10	30:39
Bear Cat Special	0:06	7:56	7:51	D.N.F.	....	.....
Belle Isle Bear Cat	0:10	8:23	8:22	8:26	8:26	33:47
Miss Mary	0:04	8:02	8:02	7:59	8:01	32:08
June	16:28	D.N.F.	....	....	....	.....

Second Heat 30 miles

	Late at Start	1st lap	2nd lap	3rd lap	4th lap	5th lap	6th lap	Total Elapsed Time
Arab VI	0:09	8:17	7:42	7:55	8:13	8:10	7:43	48:09
Bear Cat Special	D.N.S.	....	....	....	....	....	....	.....
Belle Isle Bear Cat	0:05	8:22	8:21	8:21	8:19	8:24	9:58	51:50
Miss Mary	0:06	8:06	7:55	8:01	9:16	D.N.F.	....	.....
June	0:07	8:55	7:49	7:30	8:24	8:10	8:10	49:05

3rd Heat 30 miles

Arab VI	0:07	7:58	7:31	7:49	7:49	7:38	13:11	53:03
Bear Cat Special	D.N.S.	....	....	....	....	....	....	.....
Belle Isle Bear Cat	0:05	8:16	8:14	8:13	8:15	8:18	8:19	53:40
Miss Mary	0:05	8:06	8:14	D.N.F.	....	....	....	.....
June	0:06	7:45	7:43	7:52	7:42	7:43	8:05	46:56

Speed: Miles per Hour

	Best Heat	Best Lap
Arab VI	39.1	41.9
Bear Cat Special	....	37.8
Belle Isle Bear Cat	35.5	36.6
Miss Mary	37.4	37.9
June	38.4	40.0

First prize won by Arab VI
Second prize won by Belle Isle Bear Cat
Third prize won by June

2200 CUBIC INCH DISPLACEMENT

1st Heat 20 miles

Boat	Late at Start	1st lap	2nd lap	3rd lap	4th lap	Total Elapsed Time
Wood Fish	0:09	6.14	8.18	6.01	5.59	26.32
Baby Gar II	0:04	5.46	5.59	6.11	6.16	24.16
Peerless Irene	0:57	7.47	8.36	8.13	8.37	34.20
Bone Dry	0:24	7.24	7.29	7.32	7.29	30.18
Nick Nack	0:05	7.20	7.14	7.20	7.18	29.17
Saynora	0:07	7.36	7.39	7.33	7.35	30.30
Baby Gar Jr.	0:06	7.15	7.16	7.10	7.25	29.12

2nd Heat 30 Miles

	Late at Start	1st lap	2nd lap	3rd lap	4th lap	5th lap	6th lap	Total Elapsed Time
Wood Fish	0:07	12.09	6.16	5.43	5.36	5.37	5.39	41.00
Baby Gar II	0:07	5.57	6.21	6.18	6.14	6.14	6.14	37.25
Peerless Irene	D.N.S.	....	....	....	....	....	....	....
Bone Dry	0:08	7.35	7.36	7.37	7.37	7.45	9.32	47.50
Nick Nack	0:06	7.17	7.18	7.17	7.17	7.18	7.18	43.51
Sayonora	0:27	8.41	7.40	7.38	7.40	7.41	7.40	46.27
Baby Gar Jr.	0:05	7.06	7.15	7.20	7.09	7.08	7.05	43.10

3rd Heat 30 miles

Wood Fish	0:04	5.38	5.35	5.38	5.38	5.36	5.39	33.50
Baby Gar II	0:04	5.45	5.44	5.40	5.43	6.18	6.11	35.25
Peerless Irene	0:16	7.39	7.37	7.36	21.20	D.N.F.	....	.....
Bone Dry	0:10	7.10	7.10	7.13	7.16	7.16	7.16	43.33
Nick Nack	0:03	7.19	7.25	7.21	7.22	7.24	7.18	44.12
Sayanora	D.N.S.	....	....	....	....	....	....	.....
Baby Gar Jr.	0:02	6.51	6.53	6.55	6.55	6.55	6.54	41.25

Speed: Miles per Hour

	Best Heat	Best Lap
Wood Fish	53.25	53.6
Baby Gar II	50.8	53.0
Peerless Irene	34.9	39.4
Bone Dry	41.6	41.8
Nick Nack	41.1	41.2
Sayanora	38.8	39.5
Baby Gar Jr.	43.6	43.8

First prize won by Baby Gar II
Second prize won by Wood Fish
Third prize won by Baby Gar Jr.

2200 CUBIC INCH HYDROPLANES 20 MILES; 5 MILE LAPS FOR INTERNATIONAL TROPHY 1922

First Heat

Boat	Late at Start	1st lap	2nd lap	3rd lap	4th lap	Total Elapsed Time
Baby Holo	0:25	5.07	4.51	4.54	4.48½	20.05½
Miss Toronto II	0:36	5.26	5.51	5.50	5.55	23.38
Baby Sure Cure	0:29	4.58	4.50	4.55	4.53	20.05

Second Heat

Baby Holo	0:13	4.46	4.48	4.48	4.44	19.19
Miss Toronto II	0:13	5.20	5.19	5.22	5.19	21.33
Baby Sure Cure	0:12	4.52	4.53	4.49	4.49	19.35

Third Heat

Baby Holo	0:12	4.49	4.45	4.41	4.47	19.14
Miss Toronto II	D.N.S.	....	....	....	....	....
Baby Sure Cure	0:07	4.53	4.47	4.49	4.49	19.25

Speed: Miles per Mour

	Best Heat	Best Lap
Baby Holo	62.5	64.1
Miss Toronto	58.5	56.5
Baby Sure Cure	61.9	62.8

First prize won by Baby Holo
Second prize won by Baby Sure Cure
Third prize won by Miss Toronto

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LNS-43 L-head type—four-cylinder—aluminum crank case—4¾ x 5½—50 Horse Power at 1400—weight 750 pounds

L-64 T-head type—six-cylinder—aluminum crank case— 5 x 6¼—85 Horse Power at 1200— weight 1250 pounds equipped with two-point magneto.

FOR CRUISERS

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LN-43 L-head type—four-cylinder—iron crank case—4¾ x 5½ —25 Horse Power at 600—40 Horse Power at 1000—weight 950 pounds.

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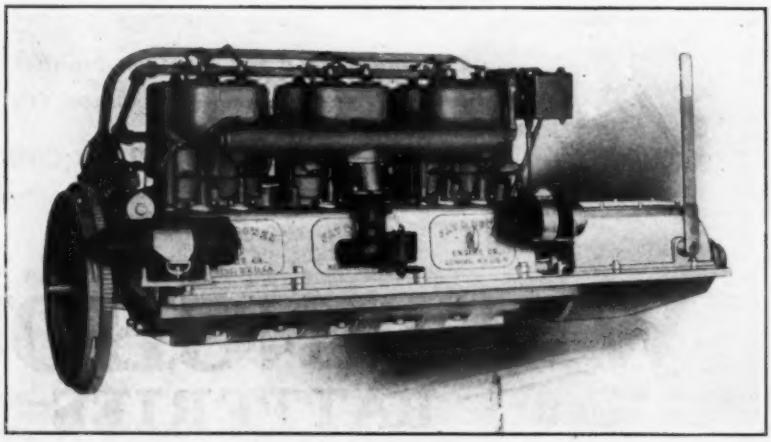

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